

MOTOR AGE

Vol. XXIX
No. 23

CHICAGO, JUNE 8, 1916

Ten cents a copy
Three dollars a year



The Verdict on the Hudson Super-Six

THE Super-Six at this writing—May 25—has been on the market five months. Over 7000 of the cars are now running. The resultant demand exceeds anything ever known among high-grade cars.

All our general advertising on the Super-Six has been stopped for months, because of the over-demand. For months the Hudson factory has run in three shifts, 24 hours per day.

We have been steadily building new factory additions. Scores of big machines to equip them have been brought in by express. We are now equipped to turn out 4000 cars per month. We prepared in advance for a doubled demand, but the demand for the Hudson has quadrupled. And every day increases it as new cars go into service.

Still the demand for the Super-Six is only beginning. It will be a year before men in general realize its supremacy. This has always been true, and will ever be true, of every great advance.

But the man who buys a fine car, would do himself a vast injustice if he failed to get the Super-Six. A lesser car will mean years of regret. It will mean a car which is far out-classed in performance and endurance. It will mean less pride of ownership.

We urge you, for your own sake, to consider these things and to prove them.

HUDSON MOTOR CAR COMPANY
DETROIT, MICHIGAN

Suggestion No. 21



\$10

A Special

Stewart

Speedometer

**For Ford and
Saxon Cars**

Owners of these cars can't have the real pleasures and economy of knowing at all times just how fast and how far they go unless you sell them this special Stewart Speedometer for \$10.

Stewart quality and service always backs up your recommendation to your customers to buy this speedometer.

"No car is better than its accessories"

The Stewart-Warner Speedometer Corporation
Chicago, Illinois, U. S. A.



MOTOR AGE



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ANNOUNCEMENTS

A full report of Chicago's second annual sweepstakes will be featured in *Motor Age* for June 15. The battle for supremacy in a field of starters greater than ever gathered for an American race before, will be told with all the sensational brushes in a way to make you see it whether you were a ringside spectator or not.

Important Announcement

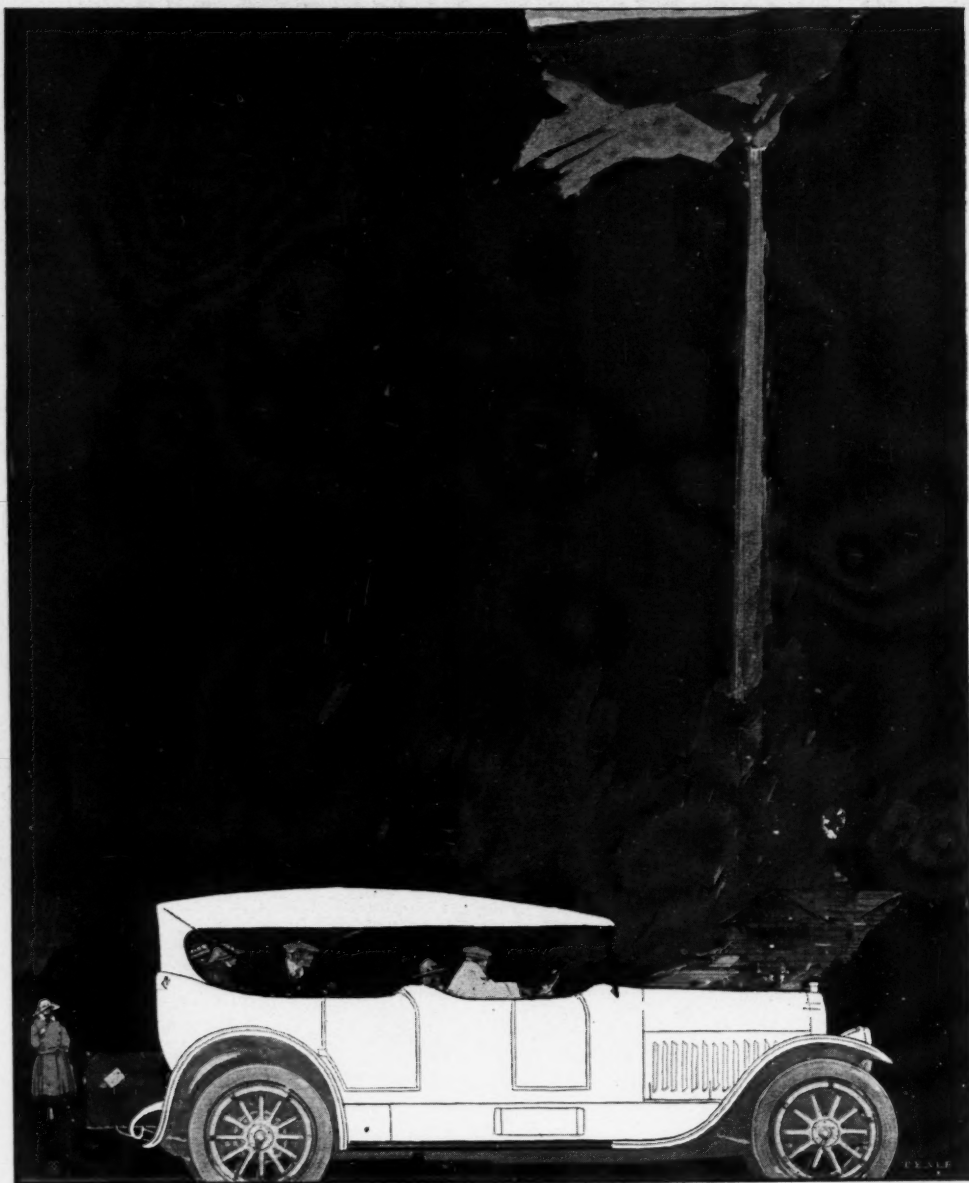
In the issue of June 29, *MOTOR AGE* will begin one of the most important editorial features of the year—the publication of a series of articles of the most practical nature for every owner of a motor car, every driver of a motor car, every one who makes his own repairs or wants to diagnose the troubles of his car.

This series will fill the most serious gap in present-day motorcar literature; the one phase about which motorists and repairmen know least and in which guesswork is most annoying and expensive. It will answer every one of the flood of inquiries on one broad department of the car that has been pouring in on *Motor Age* from puzzled readers.

Not only will the series show the owner and driver how to get out of difficulties and what to do to keep out of them in cars of yesterday and today, but—what is more important—will enable him to feel sure of his ground with the cars of the future.

Detailed Announcement Next Week

Watch for It



White

Custom Built



The White Car can never become commonplace. It is too expensively built. And the grace of its custom design is too delicate to admit of successful imitation.

The opportunity is afforded each owner to express his individual taste in upholstery and finish.

THE WHITE COMPANY
Cleveland, Ohio

MOTOR AGE

A Road System par Excellence



Lake Crescent, on the Olympic highway, which is a favorite haunt for nimrods

Evergreen State a Network of Good Roads — Intermontane Trails Take Tourist Through Scenic Grandeur

LEADING all commonwealths in the Pacific Northwest corner of the United States in the construction of new highways and the improvement of existing thoroughfares is the State of Washington. Its progress in the betterment of traveling conditions has been steady and rapid and along definite lines. The result has been that the comprehensive improvement program now nearing completion will give the state a magnificent system of good roads that are of tremendous benefit to the commonwealth at large, both from the stand-

By Frederic Wagner

point of commercial development, and the exploitation of the scenic regions.

While Washington has invested many millions of dollars during the last few years in transforming its rut-dotted wagon roads into wide, smooth, splendidly surfaced highways, it has been in the last year particularly that an unusually extensive amount of work of far-reaching importance has been brought to completion. The results accomplished during this period

have been Herculean, considering the time required, the conditions surmounted and the extensive benefits accruing from this program.

Two of the most important trunk routes in the state were dedicated to travel during 1915; a third has been so greatly improved that in 1916 it will be possible to drive by motor car 350 miles, from the British Columbia boundary line to the Washington-Oregon border in a day; and a fourth has been built into the heart of the Cascade mountains and will be completed



Moonrise on Puget Sound. This is one of Washington's beauty spots

this year across the summit to connect with North Yakima, in eastern Washington.

Concrete results give to 1915 the honor of marking the greatest period of highway development in the history of the state, not solely because of the amount of money expended and the mileage built, but chiefly by reason of the opening of several vitally important permanent routes across the state.

All Roads Improved

Supplementing this important program that has been driven through to a glorious end under the administration of the state highway commission has been an era of unprecedented improvement of secondary and lateral roads, each project forming an essential link in the chain of roads that eventually will form a network over this rapidly growing unit in Uncle Sam's great and wealthy domain.

Washingtonians need no education on the subject of the benefits of good roads. The logic of that argument was driven home to them years ago, and they have heeded it with marked respect. All Washington wants good roads. Farmers are strong boosters for better thoroughfares; it might be that they represent a strong majority of motor car owners in the state, and likewise have taken a firm position among the users of motor trucks; possibly it is because they base their opinions solely on the

economical advantages of better avenues to the market centers, but the fact remains

they not only are urging the eradication of poor arteries of commerce, but are demanding that they be eliminated. The more thickly populated centers long have been ardent advocates of good roads into the business centers, and, when the value of property warrants the expenditure, to build hard-surfaced roads into the scenic districts of which there are a great many.

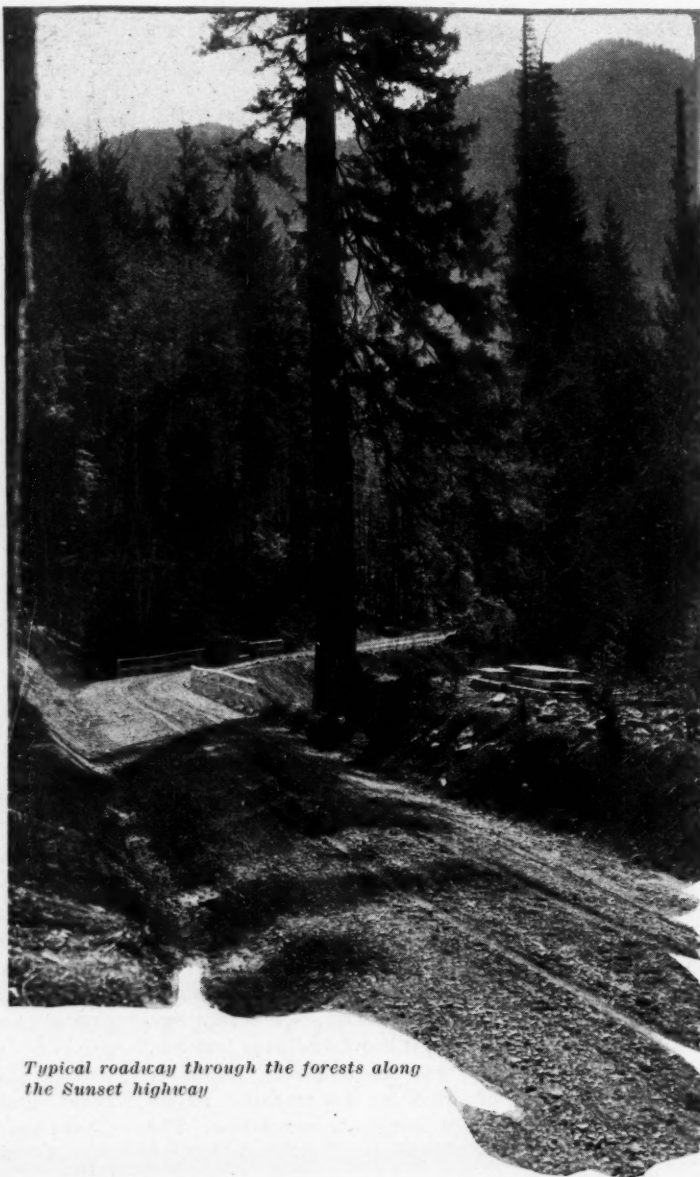
With such a unity of feeling in the matter, it has not been difficult for Washington to make such commendable progress. It has proved true not only as regards routes of commercial import, but those tapping districts of scenic value, the benefits from which will grow with the exploitation of their rare splendor. The flood of tourist travel to the Pacific northwest last year, the greatest in the history of this part of the United States, proved with the force of a 42-centimeter gun that scenic highways are a veritable gold mine, not only to local communities, but to the state at large. Many tourists went to Washington to spend several days and then continued on their way, but their sojourns invariably extended over a week or more, due unquestionably to the fact that they found magnificent scenery and what's more, splendid drive-ways leading to various parts of the state.

County and state authorities alike have seen the wisdom of capitalizing the state's scenic resources. They are making it pay big dividends. They have devised a systematic program to spend the millions of dollars that come under their jurisdiction every year; to invest it wisely and economically.

Comprehensive Program

The first step in this direction was taken by the legislature of the state of Washington when it adopted a comprehensive program of primary and secondary roads, the former representing trunk routes connecting the densely populated districts, and the latter taking care of necessary feeders to the main highways.

On January 1, 1915, the state of Washington had, exclusive of cities and towns, a total of 37,000 miles of roads, segregated as follows: Unimproved earth roads, 24,050 miles; improved earth roads, 8,500 miles; graveled roads, 3,700 miles; waterbound macadam, gravel macadam and rolled gravel roads, 339 miles; pavements, 211 miles; corduroy and plank, 200 miles. On September 1, 1915, the records



Typical roadway through the forests along the Sunset highway

of the highway commission showed that there were 500 miles of permanent roads in the state.

Not less than 450 miles were added to the state and public highways during 1915, while activities by the thirty-nine counties into which Washington is divided built upwards of 200 miles more.

Bond Issues Eliminated

Eliminating bond issues and other special avenues of road-building income, there was provided for improvement and construction work during 1915 a total of \$7,134,935, practically all of which appropriation was expended before January 1, 1916; in fact, contracts let absorbed all the revenues on hand and available during the year. The state permanent highways fund contributed \$1,547,849 during the year; the state public highways fund yielded \$1,031,899; and the counties more than passed these figures with their contribution of \$2,923,498 from the road districts and \$1,631,689 from the road and bridge fund. Several counties, principally King and Clallam, spent big sums that were raised by bond issues, these expenditures being in addition to the regular state and county appropriations.

So, it can be seen that the total amount invested in behalf of highway improvement in Washington during 1915 hovered around the \$8,000,000 mark, truly a commendable showing for a state of approximately 1,500,000 inhabitants, but it was not an abnormal year, generally speaking. The usual state and county road purses under the present tax levies are producing more than \$7,000,000 annually. If that system prevails for a few years more, Washington will have a system of thor-



The Pacific and Grays Harbor highways skirt many lakes such as this

oughfares that will challenge any state.

On September 1, 1915, the state highway commission's records showed that there was under construction on that date a total of 225 miles of state roads, representing contracts totaling \$1,000,000 in round figures. This money came from what is known as the public highway fund. On the same date there was in the course of construction 215 miles of permanent highways costing \$1,400,000.

These figures show conclusively that the state highway department is bending every effort to expedite the road building program; to rush to completion those projects that have been provided for in the appropriation lists. Commissioner William R.

Roy has been energetically pushing the road program outlined by the legislature; and Governor Ernest Lister, too, has taken keen personal interest in the activities of the state in this line. A contractor by profession, he has been of invaluable service to the commonwealth in seeing that the work is carried on properly and built correctly. He has made numerous trips over the new roads during the course of their construction to note the progress made and to study the methods and conditions under which they were being built.

Upwards of 3,000 men are employed on state roads in Washington. Contractors are working about 1,800 men; 1,100 are on the state payrolls, and 100 honor convicts



Section of McClellan pass road, where it follows the course of the glacier-fed White river



Through the forest on the McClellan pass highway

are laboring for 50 cents a day and keep. Convict labor is not an experiment in that state, for the working of felons on public thoroughfares dates back several years. One of the finest sections of roadway in Washington, namely, that near Hoodsport on the Olympic highway, was built by honor convicts.

The cost of road building in Washington varies greatly. The counties on the western slope of the Cascade mountains labor under more difficult conditions than their eastern neighbors, due to climatic and soil differences. The more mountainous and rugged west side districts are spending \$10,000 a mile, on an average, to build and surface roads; on the east side the average cost is \$5,000. The presence in the mountains of unlimited quantities of natural road building material, however, has reduced considerably the cost of these intermontane routes. Gravel and basalt in abundance is available at a shovel's length in the mountains and the gravel that was used to surface the newly completed Sunset highway through Snoqualmie pass was taken from creek and river beds.

Some of the most expensive work Washington ever has done in constructing roads is represented in the completion during 1915 of the Sunset highway across the Cascade mountains and the Olympic highway, into the Olympic mountains. Some sections of the Pacific highway, which reaches clear across the state, from north to south, have cost big sums, but this has been due chiefly to the type of permanent construction, such as concrete base and brick surfacing. The McClellan pass highway, which will give a new entrance into Rainier National Park and bring Seattle 35 miles

closer to Mount Rainier, has called for heavy expenditures, too, but they are not to be compared with the cost of driving boulevards into the two mountain ranges mentioned.

The 44-mile link in the Sunset highway through Snoqualmie pass cost the state approximately \$400,000, or close to \$10,000 a mile on the average. While the average is not abnormally high, the expense of rock work in some districts was enormous, particularly the job of blasting a shelf in the mountain overlooking beautiful Lake Keechelus. The road here had to be built 150 feet above the surface of the lake, as its waters will be heightened about 50 feet when the big dam is completed.

The old narrow, precipitous, tortuous, corduroyed trail that for years served as the only means of vehicular communication between the two parts of the state is gone, but its intensely interesting history long will remain in the memory of Washingtonians. It is a distinct asset to this now-famed scenic route.

Improvement on Pacific Highway

The Pacific highway, which serves more people than any other road in the state, ranks first in the cost of improvements during 1915, with \$318,000 to its credit. Forty-two miles of road were built during the year and 34½ miles surfaced with this sum. This improvement includes sections extending from the Canadian border to the Oregon state line. Most important of all was the construction and graveling of the so-called Waterfront road around Chuckanut mountain, near Bellingham. This 5-mile link cost \$75,000, or \$15,000 a mile, the most expensive rock work done during the twelvemonth.

The Pacific highway has more mileage of pavement than any other thoroughfare in the commonwealth. From Bothell, in King county, to a point south of Tacoma, in Pierce county, there is an unbroken ribbon of 62 miles of hard-surfaced roads. Other counties along the route annually



A glimpse of the serpentine Olympic highway, with the Hood canal on the right. This is typical of scenes to be found along the Olympic route



One of the two big switchbacks on the Sunset highway, which keeps the maximum grade within 5 per cent

are adding to this major commercial route. The day is not far distant when the pavement will reach from the Canadian boundary to Oregon.

In the meantime the state rapidly is improving every foot of the route to take care of steadily increasing traffic and to encourage tourist travel, of which Washington had a record-breaking volume last year, due to the diverting to the Pacific coast of thousands of tourists who in years gone by had spent their time and millions of dollars in seeing Europe.

Sunset Route Pacific's Rival

Ranking second to the Pacific highway in the shower of gold for the betterment of traveling conditions is the Sunset highway, opened to travel for the first time during 1915. Graveling of Snoqualmie pass, the lowest of the five gaps in the Cascade range, and clearing away small slides of the winter of 1914-1915 gobbled up \$90,000, the remainder of the appropriation of \$172,480 going toward building 19 miles of new roadway. Of this sum, \$35,000 was for 5 miles of road built in Coberly canyon by convicts. They were employed in heavy rock work, on which type of construction felons are always employed in Washington when honor camps are established.

A total of \$165,522 was spent in opening the National Parks highway, which extends from the waters of the Pacific ocean in the Willapa Harbor country to Rainier National park, thus opening one new artery to this scenic paradise and bringing Lewis county and Pacific county 75 miles nearer Uncle Sam's fairyland. Eighteen and a half miles of roads were constructed, 14½ miles were graveled and two bridges were built. This route necessitated the

construction of only a short link, but it nevertheless represents an important step in the development plans of the national park. While this vault of natural grandeur is administered by the federal government through the department of the interior, the state of Washington is doing everything in its power to make the park accessible to its 1,500,000 residents and to the vast army of tourists annually invading the Evergreen state.

The Olympic highway, rival of the Sunset route in scenic magnificence and commercial importance, was opened, and improved during 1915 to the extent of \$157,797, with which 34 miles of road was newly built and considerable mileage was cleared and grubbed. Two bridges also were built. Two particularly forbidding

grades, Webb Hill, near Shelton, and Walker mountain, near Quilcene, were eliminated. The \$157,797 does not represent the extent of work done on the Olympic trail, however, for much expensive construction was accomplished in 1914.

The Inland Empire, most important of eastern Washington's trunk arteries, drew \$92,974 in



This shows Olympic highway construction along Hood canal



The new overtaking the old. Motor car passing prairie schooner in Snoqualmie pass on Sunset highway

improvements, while secondary roads were allotted \$252,000 in round figures. With this money there was built by the state a total of 74 miles of roads, and 5½ miles were surfaced. This work has been done chiefly in eastern Washington.

The expenditure of \$50,513 on the McClellan Pass highway completes the commonwealth's activities for 1915 in the development of major routes. However, small amount that it is, the McClellan pass appropriation represents an important forward step in the opening of various parts of Rainier National park, without doubt the greatest drawing card for tourists in the Pacific Northwest.

Pacific Holds Commercial Supremacy

Because of its commercial supremacy, the Pacific highway naturally takes precedence in an account of the state's highway activities for the year, but greater importance is attached to the opening to traffic for the first time of such vital routes as the Sunset, Olympic and National Parks highways and the commendable progress on the McClellan pass route. They represent in themselves the greatest accomplishment in a single year ever credited to any state in the Northwest. Including the Pacific highway and several important eastern Washington roads, they represent the foundation of Washington's comprehensive road system.

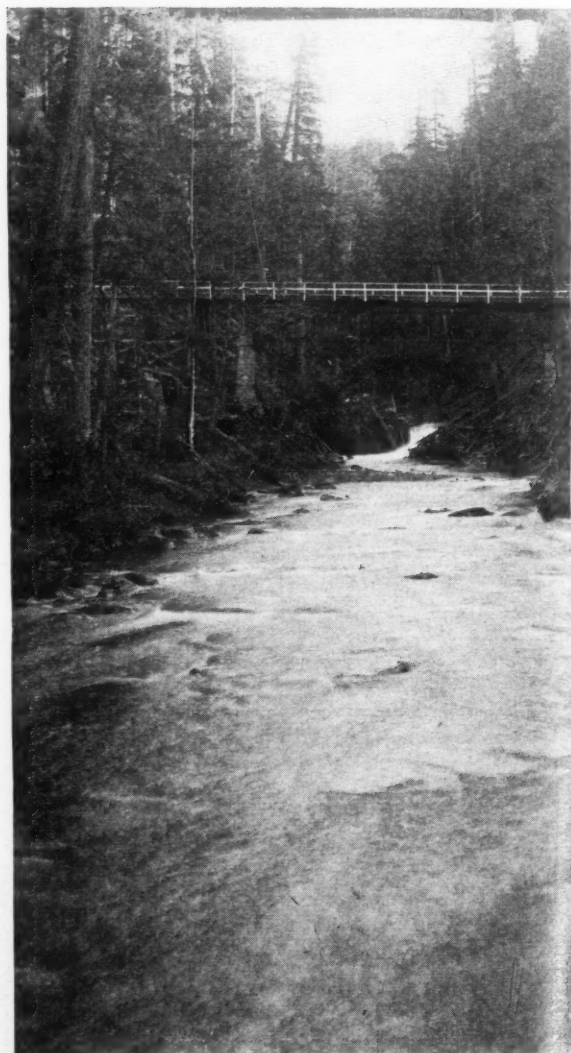
Washington is building primarily for commercial development, but no matter in what district the taxpayers' money goes, the scenic resources of the state are being benefited immensely. And, after all, tourist travel is a commercial asset. That was clearly demonstrated during the 1915 tourist season. Thousands of eastern tourists, who imagined that Europe excelled in gorgeousness of natural environment altered their opinions greatly when they visited Washington. They were literally swept off their feet by the splendor of nature's handiwork, as they viewed the country from comfortably-upholstered cars whirling smoothly over well-kept roads. They used all the superlatives at their command in an effort to express their surprise and wonder at the beauty of it all. They were amazed at the variety of rich mountain, forest, lake, stream and field views, to say nothing of finding such metropolitan cities as Seattle, Tacoma, Everett and Belling-

ham situated on the shores of placid Puget Sound, a mighty arm of the Pacific ocean that sweeps far inland.

They returned to their homes in the East and Middle West, and yes, even to California, this army of surprised nature lovers and pleasure seekers, but they are coming back, and with them will be thousands of friends who will be captivated by their enthusiastic songs of praise of Washington and its vault of unsurpassed scenery, tapped by a system of wonderful drive-ways.

And when they return they will find highway conditions even better, and for good measure, a vast field of new wonders to explore, for Washington is pushing its road development plans forward with bulldog tenacity and determination. The system has been decided upon; funds are coming in every year to the tune of \$7,000,000, or more.

Of particular interest at this moment are the new wonderland trails that have been opened during 1915: the Sunset highway across the Cascade mountains, the Olympic highway along the shores of Puget Sound and Hood Canal and into the Olympic mountains; the National Parks highway from southwestern Washington to Rainier National park, and the exten-



New steel bridge across Snoqualmie river on Sunset highway

sion of McClellan Pass highway far into the Cascades south of the Sunset route.

They are the trump cards that Washington holds to dazzle the visitor. They are wealthy in varied magnificence, yet each holds charm of some nature to distinguish it.

The Sunset highway without doubt is the premier scenic trail, because within the 44-mile link through the heart of the Cascade range is crowded a more gorgeous and greater variety of natural splendor than any other route in the state, and that may be said without reflecting upon the rare qualities of the other roads, of which Washington is so proud.

To the visiting motorist the journey across the Cascades over the newly-completed Sunset highway is a scenic paradise. To those who in years gone by struggled against great odds to cross the mountains in horse-drawn or motor-driven vehicles it is more than a paradise; it is a miracle road. Gone are the tortuous, precipitous grades; gone are the stretches of corduroy that made occupants of vehicles bob around like a cork in a fountain. In their places now is a magnificent highway devoid of steep ascents, or down grades, or sharp turns. The steep pitches that once tested the endurance of motor car and beast of burden, and man, too, for that matter, have been eliminated by engineering skill and gold. Shaky old wooden bridges have been replaced by great steel spans.

Echo Has New Sound

Where in years past Uncle Sam's military wagons rattled over the trail through Snoqualmie pass on their way to Puget Sound to provide food and munitions for the soldiers stationed here to keep hostile Indians properly tamed, there now is heard the screeching signal of the motor car; the clatter of hoofs has been supplanted by the roaring exhaust of the twentieth century highway cruiser running on rubber tires. Rapidity of travel, too, has undergone some epochal changes. It used to take days, even weeks, to make the trip across the mountains. Today, with a splendid road and good, dependable motor cars, it is possible to drive from Seattle across the summit of the Cascades and 175 miles down into the Yakima valley easily in a day. And with far more comfort.

To drive a boulevard across the high range of mountains that divides the state of Washington into two distinct parts was a dream beyond the imagination of the early settlers, but nevertheless that is what has been accom-

plished, a herculean task that has brought credit to the engineers, the state highway commissioner and the contractors who were instrumental in its construction. And, too, in the completion of this great project there is derived no small amount of pride and satisfaction by a small band of good roads boosters who worked unflaggingly to break down the barrier that prevented trans-state travel except by train. They were called dreamers; possibly they were, for the trail they strived so energetically for is hemmed in by a fairyland of nature.

But the Sunset highway is more than a scenic route. It is of tremendous importance to the commercial welfare of the state. It is now possible for the farmers and settlers to cross the commonwealth in comfort and safety and without delay. Progress has played some queer pranks with forms of locomotion, but it has redounded to the enjoyment of the tourist. Any day, motorists crossing the mountains, will encounter prairie schooners, bleached and torn by

the elements and creaking under the strain of years of travel over many states, their wiry owner-wanderers nearing the three-score milestone in life still seeking that haven where they will "settle down" on a farm.

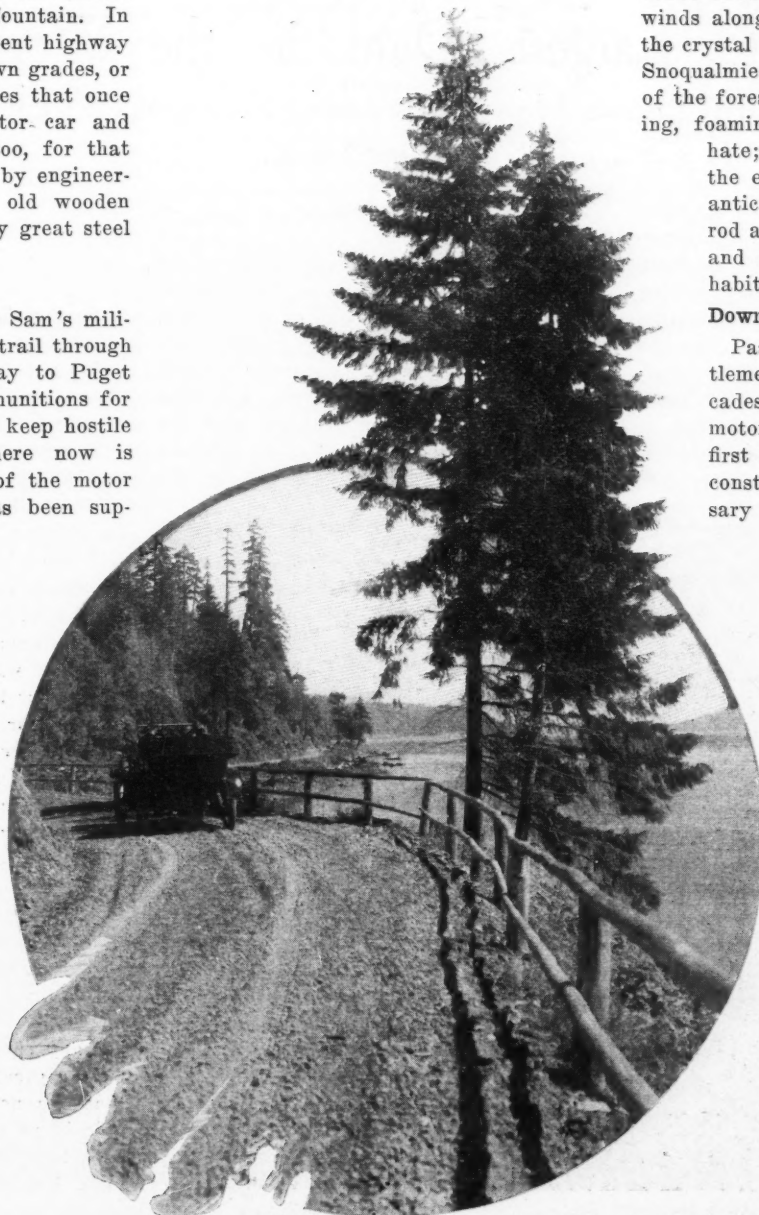
From Seattle, its western terminus, the Sunset highway leads over a splendidly-paved trail, always gently climbing, crossing numerous creeks and skirting banks of mighty mountain rivers. Snoqualmie Falls, where the torrential stream drops 256 feet into the mouth of an awe-inspiring canyon, is the first scenic wonder to be viewed as the tourist spins along on the mountain trail. After traveling the plateau beyond North Bend the ascent of the Cascades again is begun. The road is wide, exceedingly well graded and packed down hard with gravel as a result of the almost continuous stream of rubber-shod vehicles that passed over its surface during the spring and summer months of 1915.

Then begins a seemingly never-ending round of surprises as the splendid highway winds along the mountainside overlooking the crystal waters of the south fork of the Snoqualmie river. On one side are giants of the forest, while on the other the dashing, foaming stream singing its song of hate; then a deep pool that makes the eyes of the fisherman pop with anticipation of a future visit with rod and reel to angle for the striped and spotted game fighters that inhabit the waters of this stream.

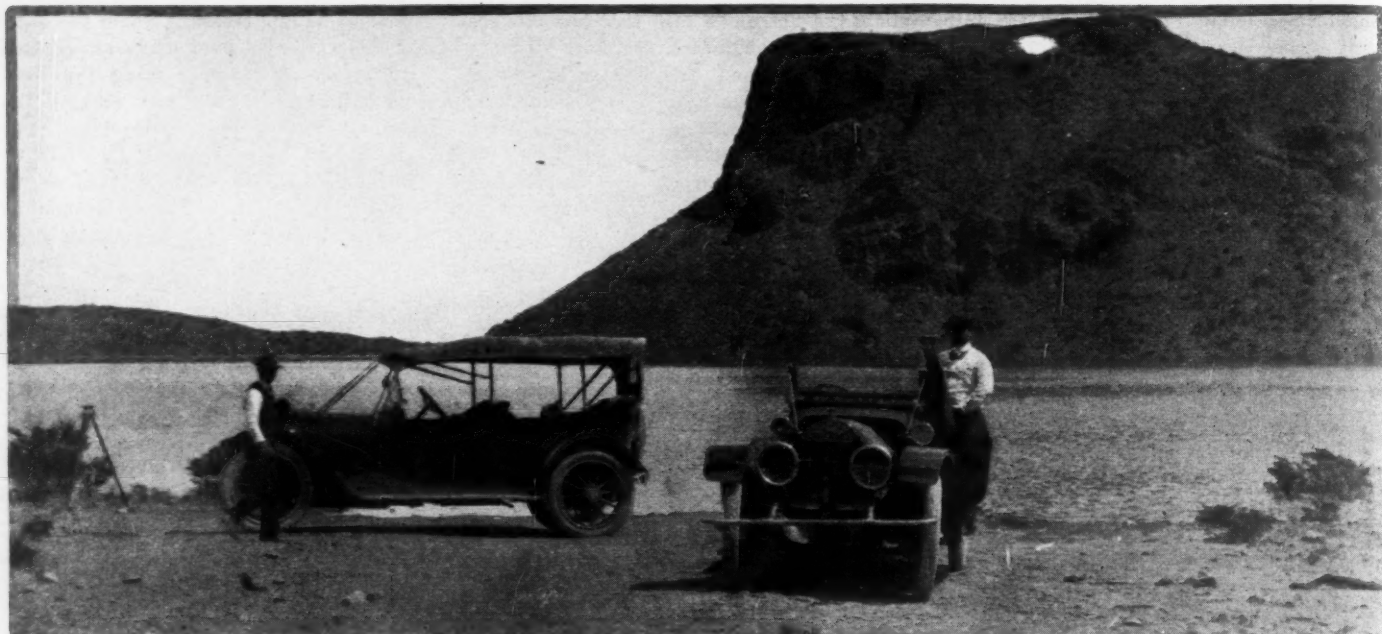
Down the Switchbacks

Passing Bide-a-Wee, a little settlement in the heart of the Cascades, 45 miles from Seattle, the motor car begins the ascent of the first of two great switchbacks, the construction of which were necessary to keep within the maximum gradient of 5 per cent on this great highway. The summit of the Snoqualmie pass is reached with such ease that one scarcely can realize that in the space of several hours he has climbed from tidewater to an elevation of 3,010 feet, or over.

The motor car has not proceeded very far eastward over this tableland on the very top of the pass until it begins descending the eastern slopes. As one glances over the side of the car he notes with interest that the streams flow in the direction opposite to that which he observed but a few minutes before. Coal Creek is followed for several miles and then the road describes a serpentine course high above the waters of Lake Keechelus.



Olympic route skirting Hood canal



Our two cars on shore of the lake, Elephant Butte in background

Elephant Butte, Largest Dam in the World, Completed

Inspection Trip Shows Many Interesting Features, Which Are Filmed and Described

WITH the completion of the Elephant Butte dam in New Mexico, incidentally the largest in the world, southwestern motorists have a new weekend touring route that leaves nothing to be desired in the way of variety. With El Paso as the starting point and the dam an objective, one has a 125-mile trip over roads which for the most part are as fine as any state highway. Half of the route lies through a fertile valley with trees and

By Hi Sibley

fields that seem too vividly green to be real, after one's eyes have been accustomed to the dun and drab of arid mesas. Follows miles over treeless grazing land as flat as a table and on velvety sand-adobe roads so straight that the speediest of cars may be driven at their limit for hours. Then come the winding canyons where the road clings to the side of the

mountains, causing the timid motorist a very perceptible quickening of the pulse as the long cars negotiate the hairpin turns. And presently the tourist emerges upon the shores of a vast lake formed by the backwater of the dam. Here he can enjoy a refreshing swim or, if he prefers, cruise up the lake in one of the dozen or so motorboats at his disposal.

It makes a delightful trip. As guests of Malcom A. Fraser, secretary of the El Paso Chamber of Commerce, four moving picture men, two El Pasoans and myself were invited to make the run up to Elephant Butte to witness the informal dedication ceremonies on the completion of the dam on May 13. Naturally the big dam was the principal object of interest, but the long trip was by no means tedious, for the observant movie men were alert to every feature along the way and we stopped many times to film scenes that were intensely interesting before we arrived at our destination.

An Early Start

We left El Paso in the early morning with the two cars pretty well cluttered up with spraddle-legged tripods, lunch and feet. It seems that most any car can carry an unlimited amount of impedimenta, but the roomiest tonneau never has any special provision for feet. There were a great many more feet on this trip than we needed, to my notion, and one pair in particular I could have dispensed with very nicely; a pair not mine by heritage, but which I carried on my shins all the way.

Some forty miles north of El Paso, in



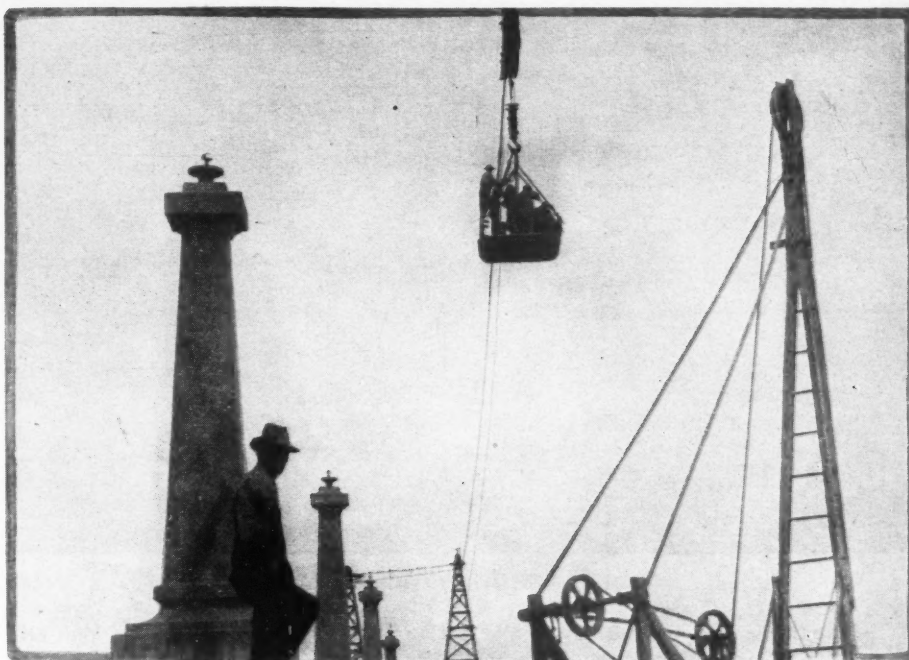
Movie men taking picture of the last touches in finishing the dam. Putting the last concrete lamp pillar in place

Dona Ana county, N. M., we stopped at Dr. Young's ranch to pay our respects to a herd of imported sheep, some very high bred and, I suspect, somewhat supercilious animals from the disdainful greeting they gave us. It required an hour of the liveliest scrambling to persuade the most valuable specimens to pose before our cameras. Still, a sheep with a price tag of \$1,500 might be expected to be as distant as a popular movie star. I hesitate to essay a description of these haughty creatures known as Karakul sheep, for Dr. Young used some highly scientific terms in explaining their points, but, briefly, they came from Afghanistan and supply costly furs for the ladies—bless 'em!—as one does until he gets the bill for the furs. When the little black lamb is 4 days old his coat is tightly curled and kinky, and this is Persian lamb. A few weeks later the curls loosen and it becomes Astrakan. But let us leave the Afghanistan dams and get to that larger zoological specimen—the Elephant Butte dam. Pause.

County Roads Famous

The next point of interest on our way was Las Cruces, a pretty little town with rose-covered bungalows and well-kept lawns, and as cool and as inviting as a northern summer resort. We stopped here but a moment and then bowled out over an almost perfect stone road which has made Dona Ana county famous. For miles it is bordered with orchards and alfalfa fields and here and there we crossed a huge irrigating ditch, almost a canal, fed by the lake at Elephant Butte. The homesteader in this valley does not have to depend on capricious old Uncle Jupe Pluvius, but has unlimited water at hand every day in the year from the irrigation which he turns into his fields at regular intervals and can count on bumper crops thereby.

An hour out of Las Cruces we left the



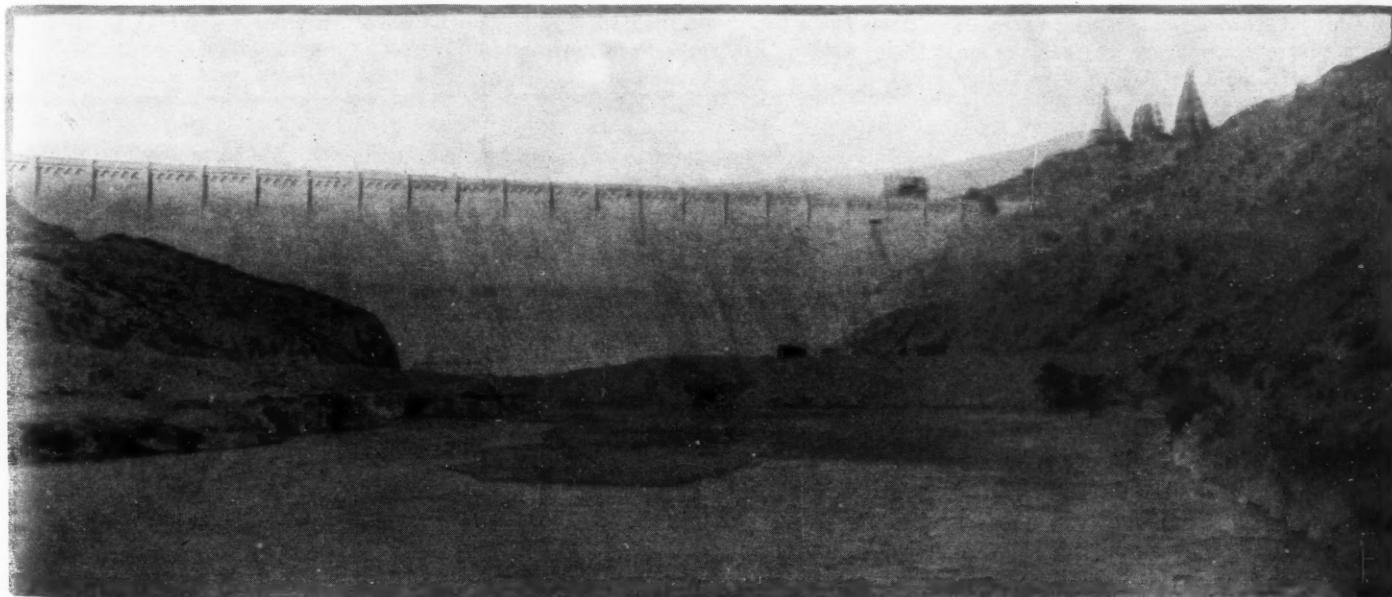
Movie men in the skip crossing the dam

Rio Grande valley and cut off across a 50-mile mesa in a direct line to Elephant Butte. This has been termed the "land of magnificent distances" and that is indeed an apt description. In the clear air mountains 40 miles away seemed but 5, and we could see the little village of Cutter, comprising half a dozen small adobes, distinctly, though it was an hour's run from us as fast as we could travel. This mesa was dotted with thousands of cattle grazing at wide intervals on the sparse grass. An average of ten acres, I believe, is required for one head per year, to raise it to maturity, at which time it is shipped to better pastures for market fattening.

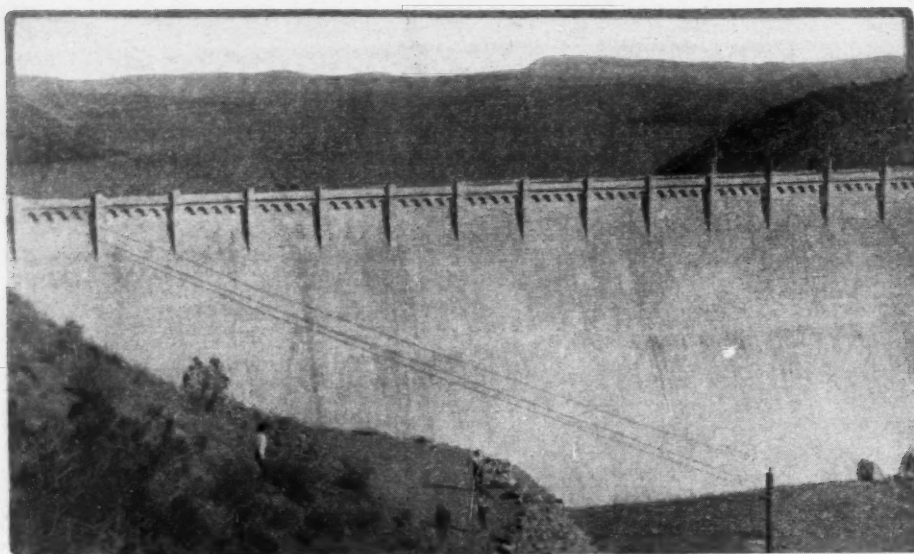
These steers were great, gaunt, white-faced animals, rather lackadaisical in their actions. They bore little physical resemblance to cattle as we know them in the

north, but they had that same exasperating habit of lying in the middle of the road until a car is right upon them. A native related an unfortunate experience—for the steer as well as for himself—that occurred a few days before. The animal was standing in the middle of the road, as per custom, and faced in the same direction as the car, but for reasons of its own refused to heed the motorist's honk, so the driver sought to encourage a little animation in the critter by gently bringing his hot radiator up against the obstinate beast's after-deck. Latent energy came to the surface at once, but was misdirected; with a double-barreled kick the steer knocked off both headlights.

Presently we came to the canyon trails; the character of the road bed was sharp and rocky, but there were not many miles of it. We hugged close to the mountain



View of the dam and lake taken from the mountain top, Elephant Butte



View of dam taken from downstream

side as we made the ticklish turns, and two or three times had to back down to a wide place to permit a team or car to pass us. Fortunately, we happened to be on the inside on these occasions. As we cautiously crept around one of the curves and got the first glimpse of the lake we were astounded at its size. Lakes are mighty rare in this country, but to come upon one suddenly, and that one large enough to cover the entire state of Delaware to a depth of 2 feet—pardon me for quoting statistics—would cause any one to give a gasp of astonishment. And that massive dam was still greater surprise; a monstrous wall of masonry as high as a skyscraper and a quarter of a mile long. It certainly was a goshawful big hunk of concrete!

Not an Easy Job

Being only 3 o'clock in the afternoon, there was plenty of light for a good many feet of film before dinner, so we left the cars at the government quarter house, a modern hotel by the way, and set forth with tripods and cameras. And here is something I learned—unless a man is built like a concrete warehouse and has the endurance of a mule he shouldn't volunteer to act as assistant to a movie camera man—especially in mountainous country. A movie camera and tripod may weigh only 30 pounds or so when you start out, but before you get back it will be nearer 300 pounds. Besides, the assistant must be "as agile as a gol darn chipmunk" to keep up with the movie man, for the latter leaps from mountain peak to mountain peak like a goat to get a little better view than his rival, and he never knocks off work as long as there is daylight or any film left in the magazine. That dam was filmed from every angle, port to starboard, fore and aft; the movie men even went up in a huge steel skip, or bucket, suspended on a cable running the length of the dam and about a hundred feet above it, and ground away with their cameras as they were drawn across. I

didn't go up with them because high altitudes always affect my pulse, or something. Besides, the cable supporting that heavy bucket looked about as substantial as a cobweb. As they swung up, General Superintendent Schmalhausen nonchalantly stood on the rim of the bucket and waved instructions with his arm as coolly as though he were directing an orchestra. It was a giddy spectacle.

Data, as a rule, is, or are, tedious, but this engineering feat is such a tremendous one that the reader may find a few figures interesting. The dam, built by the United States Reclamation Service, holds back enough water in the upper Rio Grande valley to irrigate approximately 200,000 acres of hitherto arid land in New Mexico, Old Mexico and Texas. A lake 45 miles long is formed, the largest body of water between the Gulf and the Pacific coast, by the way, with an average depth of 66 feet. And there are fish in this lake, too—yellow perch and catfish and carp. We saw some of the last as big as razorback hogs, and unfortunately they are destined to be monarch of all they survey, as is their custom. Six years were required to

complete the dam and over 600,000 cubic yards of concrete and masonry were used in its construction.

The name "Elephant Butte" was derived from an extinct volcano, the crater of which now rises as an island above the surface of the lake. This crater is supposed to resemble an elephant, but with all due respect to the imaginative person who gave it this name, I think that Giraffe Hill would have been just as appropriate, for in a futile hour none of us succeeded in tracing any resemblance to an elephant. Bill Hearfield, of the Hearst Vitagraph Weekly, got an idea that he could see an elephant lying on its back, while Slim Ries, of the Tribune-Selig, insisted that there were two elephants. In this connection I must add that Ries is an abstemious young man. Joe Johnson, the Pathé representative, spent half an hour working an elephant out of a mountain way beyond the butte, and never knew his mistake until he started to point it out to us. Gaumont Burrud found the elephant, but it was a disappointing pachyderm, for the ears, trunk, tusks and other accessories which we simple-minded folks like to associate with such animals were missing.

When the U. S. Reclamation Service started out to build this dam they went about it right, for first they laid out a modern town to house the 3,000 persons necessary to its construction. There was a sewer system, lighting system, fire system, telephone exchange—there were 600 children in school at one time. The administration buildings and staff quarters are on a hill overlooking the lake, as is the mess hall. Now that the dam is completed and these quarters will no longer be needed for the administration staff, they are to be let out to the highest bidder for a summer resort. With the up-to-date and attractive buildings and recreation features afforded by the lake, coupled with the excellent roads between El Paso and the Butte, this promises to be a very popular resort for motorists.

The informal dedication ceremonies were



Main street of the town of Elephant Butte. Built by government and at height of construction had population of 3,000. It is to be leased for a summer resort

simple and brief; the formal opening will take place in the fall. As the last concrete lamp post was swung in place there were rousing cheers by visitors and workmen. General Superintendent Schmalhausen read a congratulatory telegram from President Wilson.

In the morning Construction Engineer L. J. Charles arranged a motor boat party and, distributed in three boats, we cruised up the lake and around the Elephant Butte, still with an eye out for the elephant. We didn't find him, but we were not disappointed, for the novelty of boating on cool, crystal waters in the heart of a desert waste was treat enough for us.



Another view of the lake. Some of mountains in the illustration are 45 miles distant

Is This Joy Riding with Your Stenographer?

Arthur Brisbane Dictates Editorials Between Home and Office—Edison Indorses Idea

ADDITIONS to the utility of motor cars has kept pace with the rapid improvement in the cars themselves and so many and varied have been the uses to which cars have been put that one forever seems to be asking, "What next?" For the aggressive business man the motor car has shortened the route to his office. It has offered a period of relaxation both before and after the business day; made him fresher for the start and more rested after the daily grind. Now comes Arthur Brisbane, editor of the New York Evening Journal, and incidentally reputed to be the highest-paid editorial writer in the world, with a brand new idea in the way of utilizing his morning ride to his office and his evening spin to his home in Hempstead, Long Island.

Brisbane has installed an Edison phonograph in his Owen Magnetic, having had a cushioned box, which he devised himself, built in the rear compartment. In a letter sent to R. M. Owen, who developed the Owen Magnetic car, he said in part:

"I write this on my way from Hempstead to my office in New York. The car is going a little over 30 miles per hour, as I glance at the speedometer, on an average Long Island road. I am able to utilize the time on the way home working and writing—a great saving and one that I believe will be of vast importance to business men. The car, plus the genius of Edison, adds 2 hours to my working day—2 hours working in the fresh air. I am going to take the car out to Mr. Edison's laboratory and show it to him. He was intensely interested when I sent one of his phonographs to Tolstoi—he fixing it up with great care—and he will be more interested to know that the sum total of hundreds of millions of business hours that working Americans spend in their cars can now be made useful—the best hours of the day. To work in a car with the fresh air pouring in, no interruptions from telephones or callers, is a luxury, and a

productive luxury, which is the only good luxury."

Since writing the letter Brisbane drove to the Edison laboratories and showed the wizard of invention the device. To say that Edison was very interested in Brisbane's ingenuity would be putting it mildly. He not only watched Brisbane dictate but tried it himself.

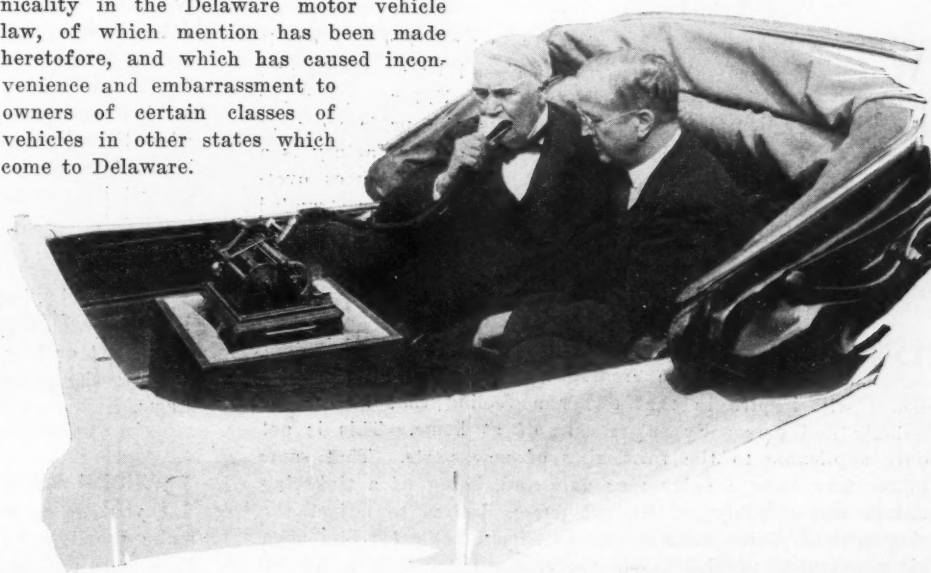
Of course, there are many men who would scoff at the idea of dictating letters on the way to and from their offices, but then, not every one who has use for a dictation-recording machine is so prolific a writer as Brisbane, and besides the writer imagines it must be pretty hard work to find time in a day, without resorting to extraordinary means, to earn \$333.33, which is the modest daily salary Mr. Brisbane is said to earn as editor of the New York Journal.

MIXED ON MOTOR LAW

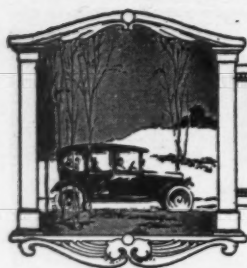
Wilmington, Del., June 2—Pennsylvania and Delaware are at war over a technicality in the Delaware motor vehicle law, of which mention has been made heretofore, and which has caused inconvenience and embarrassment to owners of certain classes of vehicles in other states which come to Delaware.

Under the law of this state local registration is required for cars coming here from other states which are owned by non-resident firms, corporations and co-partnerships. As this law is not generally known outside of the state, there have been a number of arrests. Because of the manifest hardship this entailed, the authorities eased up for a time, but prosecutions were resumed, whereupon Pennsylvania, which is affected the most, because of the proximity of Wilmington and Philadelphia, which are only 25 miles apart, has begun to retaliate. This has caused the Delaware Automobile Association to issue the following notice to Delaware motorists:

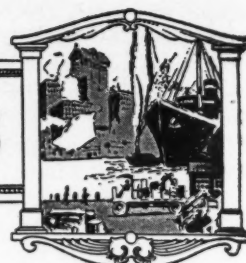
"In view of the fact the police authorities in the state of Pennsylvania (and particularly immediately adjacent to Delaware) have decided to enforce the law relative to the registration of motor vehicles owned by non-resident firms, corporations and co-partnerships, and the licensing of operators thereof, we would advise that you procure such registration and license before permitting any of your motor vehicles to go into said state. This condition is brought about by the reciprocal clause in the motor vehicle law of the state of Delaware."



Arthur Brisbane watching Thomas A. Edison dictating in a motor car



EDITORIAL PERSPECTIVES



Stabilizing the Market

MERGERS and rumors of mergers running into the hundreds of thousands of dollars have been the burden of the motor car news in financial circles during the past week or two. With the control of the most extensive of the older combinations of individual factories in the motor car industry in ostensibly new hands and a more recent combination of accessory and parts interests in the same hands, it was predicted that the ultimate in motor car combinations had been reached. Now comes the announcement of another and still stronger financial grouping of interests in the industry which, to cap the climax, probably will be very closely allied with its two predecessors.

AT first blush, it may be a not uncommon view that these monster amalgamations of previously separate interests must inevitably too greatly strengthen the position of those most intimately connected, to the proportionate detriment of outsiders, whether they be competing manufacturers or consumers. It has been the experience in other industries that vast combinations of capital and manufacturing resources have resulted in the elimination of competition, and through this elimination have had the final effect of removing from the consumer all control of the price of the commodity.

IN the present instance, however, no fear need be felt that the uniting of resources will be anything but beneficent in its final effect, so far as either consumer or dealer is con-

cerned. In fact, it is the announced intention of those close to the moving spirits of the coalition to remedy, insofar as may be possible, those conditions which have caused the rise in cost of motor cars and uncertainties as to the supply; also to take such steps as will prevent a repetition of these conditions.

TO accomplish this much-to-be-desired result, necessitates that the car makers be in control of a portion of either the raw materials or the fabricated parts of the car, or both. The chief factor in the materials and parts is steel, and one of the main reasons for the combination is the plan to co-operate in the operation of steel plants to assure a constant and adequate supply.

THE announced intentions of those in control of the merger are thoroughly logical, and the results they expect are probable. The scarcity of raw materials and the unusual demand for specialized production brought on by the European war have made the supply of motor car materials both uncertain and costly. If the danger of a continuance or repetition of the condition can be guarded against, it will stabilize the industry in a way that cannot fail to reduce the cost of production and thus the price of the car, and if this can be accomplished no one should see fit to complain about mergers or combinations of capital; they should be acquiescent.

Near-to-Owner Service

IF a man wants a cigar he goes to the corner store—he doesn't write to the cigar maker for it. So with the car owner; if he breaks an exhaust valve he wants to get a new one near home. The delay of getting a part from a distant factory is not conducive to good will on the part of the owner, nor is it stimulating to sales for the manufacturer.

WHEN a new organization prepares to market a new car it is a question which department should be organized and perfected first—the sales or the service. Unfortunately for the owner, the latter generally receives the preference; in fact, service-rendering ability on the part of the factory is a latent factor until the production stock room becomes over-taxed taking care of short orders from those owners stranded with broken parts. Some concerns do not seem to appreciate that they should be just as eager to keep owners satisfied as they are to make the original sales.

PROPORTIONATE to the scope of territory covered in new car sales should be created a near-to-the-owner service which will inspire in that owner a feeling that he can be quickly and personally taken care of at home. This is not only applicable to the furnishing of new parts. That same owner may have a noisy rear axle and, being of a tinkering nature and possibly, of limited purse, desires to adjust the ring gear or pinion himself. Scorn should not greet him upon his appearance at the factory service station with a list of questions as to how to do the job himself. Maybe he can do it,

and it is the factory's or its representative's duty of service to tell him how as much as it is to reap the profits by doing the job itself. When this fact is learned by the service man then he will find his popularity increasing.

A SERVICE department, well managed, is a thoroughly profitable institution on the basis of parts sales alone. On the strength of these profits, why should there not be a service department within a service department? The owner wants to get his parts promptly and wants to get advice promptly. It is what the owner gets along this line that induces him to buy his next car of the same make. A factory service station should control its well-managed sub-stations just as does a sales department.

BEFORE buying your car, Mr. Prospect, you will do well to ascertain first how quickly you can get that new rear axle shaft or how far you will have to go to ask somebody—and get the correct information—about adjusting those valve stems.

BEFORE selling a car, Mr. Dealer, tell your customer what you can do for him in the way of service, and before you make promises be reasonably sure you can live up to them. First sales are not all you are in business for. You want future sales and parts business.

Do Ethics of Motoring Include Picking Up Wayfarer?

Belief Is Expressed That Motorists Are Too Liberal With
Persons Asking for Rides

WHAT are the ethics of motoring? Is it proper for owners of cars to stop and pick up persons they see walking along the highway or waiting for street cars, or should they pass them up as the paycar of the steam lines does the tramp? If the superintendents of the street railway lines are asked for their views, they will insist that car owners are altogether too liberal, not only quitting the street cars when they purchase a car, but diminishing the receipts still further when they pick up friends enroute. The street car men greatly prefer the policy of ignoring the pedestrians or those waiting to board the traction cars.

Many car owners sympathize with the traction companies and steadfastly refuse to share their car with persons outside of their immediate family. There are enough of these car owners to give rise to the query, "Is a motorist without friends?" This does not imply that the car owner of this sort is an outlaw whose hand is against every other man.

It merely inquires whether or not the man who buys a motor car forthwith severs all of the ties of friendship which he once cherished or appeared to cherish. The other day an old resident of Bloomington, Ill., who does not own a car, was walking with a visitor from another city. The streets were thronged with cars.

"Haven't you a friend with a car?" wistfully asked the newcomer.

"I had a lot of friends who purchased cars, but they do not know me any more," was the gloomy reply.

This led to the thought, does the possession of a car imbue a man with selfishness or inflame him with a swelled head? Is it true that the driver of a buggy overtaking a person walking on the road will ask him to ride, ninety-nine times out of a hundred, while the driver of a car will not perform this action once in a hundred times?

The question has two or more sides to it. There are occasions, doubtless, when a person is going somewhere on foot and would cheerfully pay a dollar for a ride, when a friend, in a motor car, head up, eyes straight ahead, whirls by and throws dust in the face of the pedestrian.

Then there are other occasions when standing upon a curbstone waiting for a comfortable street car, which would drop one in front of his office or home, the same friend comes along, stops his car and drops one at a point where he must walk several blocks.

There are arguments upon both sides and the subject appears to be worthy of more extensive discussion. There appears

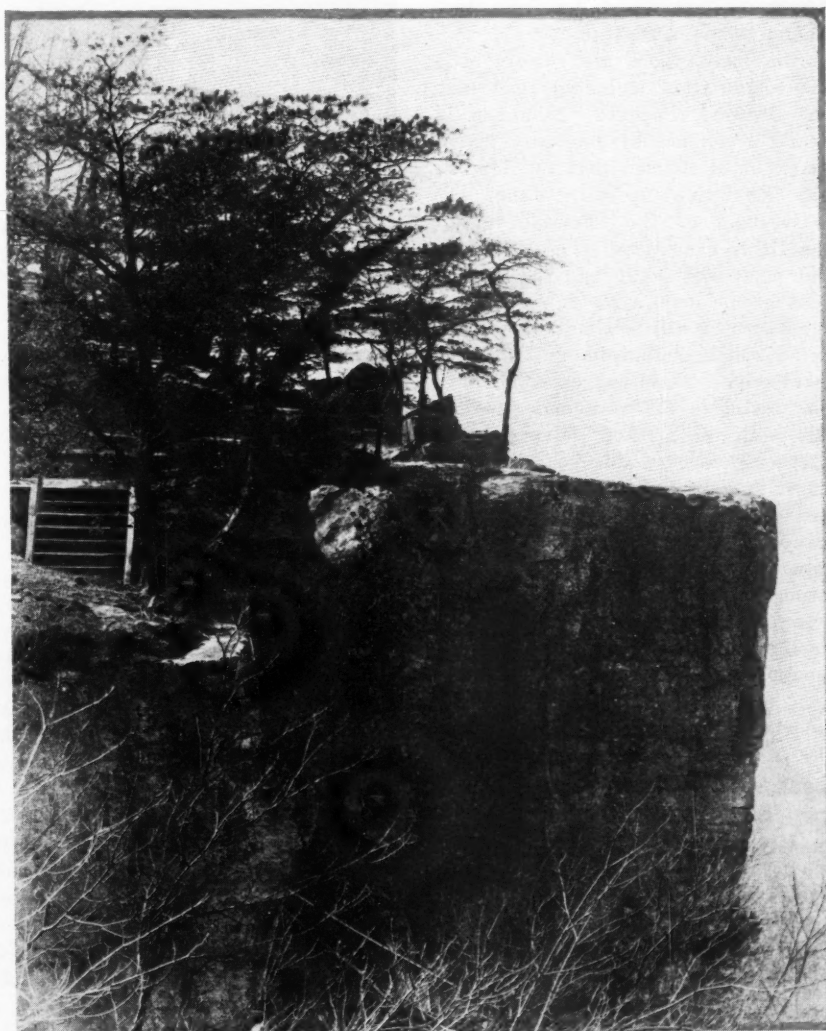
to be a new field for a display of ideas. What are the ethics of motoring?

CLUBMEN BUY GAS AT WELLS

Cincinnati, Ohio, June 3—Officers of the Cincinnati Automobile Club have under consideration a plan submitted to them yesterday to purchase gasoline in

tank lots in the oil fields at prices that will permit it to be retailed to members at 20 cents a gallon. The plan as yet has not definitely been adopted, but it is proposed, it is said, to purchase 100,000 gallons in the first transaction for experimental purposes. Most of Cincinnati's supply comes from Oklahoma.

See America First —
• • • See America Now



EDITOR'S NOTE—This is the eighty-first of a series of illustrations and thumb nail sketches of the scenic and historic wonders of America to be published in Motor Age for the purpose of calling the attention of motorists to the points of interest in their own country.

NO. 81—THE LEAP, LOOKOUT MOUNTAIN, TENNESSEE

FROM the top of Lookout Mountain which towers above Chattanooga, Tenn., one can see seven states, Moccasin Bend in the Tennessee river and the battlefields of Chickamauga and Chattanooga. Down the side is a projection known as the Leap, this being shown in the illustration above. This projection juts out at right angles and is cut as squarely as if someone had chiseled the rock away in that formation.

\$200,000,000 Merger of Car Companies Biggest on Record

Chalmers, Hudson, Overland and Auto-Lite Join Forces — Others May Come in—Willys to Be at Head

DETROIT, Mich., June 3—Two hundred million dollars is the approximate capitalization of one of the biggest mergers in the history of commerce. It will cause the motor car industry to rank next in order to the steel trade, as it is only the United States Steel Corp. which will have a larger amount of stock. The exact number of the companies involved in this gigantic merger is still undecided, but the center of the new organization will be the Willys-Overland Co., and the main idea in forming such an immense combination is to facilitate the purchase of raw material by rendering the companies in the merger independent of sources of supply. At present, the names mentioned in connection with the merger are Willys-Overland, Hudson, Chalmers and Auto-Lite.

Simultaneously, there are rumors of a possible combination including Chevrolet, General Motors, Packard, Edmunds & Jones and a number of accessory manufacturers. It is claimed that the Timken company may line up with either the Willys-Overland or the Chevrolet group and that it is even possible General Motors, the Chevrolet group and the Willys-Overland group may enter into working agreements which will be almost the equivalent of a single combination.

The reason for these suggested mergers is to be found in the abnormal state of the raw material market. Every large manufacturing concern this year has suffered more or less severely owing to the unexpected great rise in the price of steel and many other commodities. It is felt, therefore, that the best insurance against fluctuations in the cost of raw material is, either for the motor car plants to establish steel mills, etc., of their own, or to form combinations of such strength that they can take over existing steel mills, thereby absorbing them into the merger virtually if not actually.

Individual Steel Mill Too Costly

Howard B. Coffin, vice-president of the Hudson Motor Car Co., is the authority for the statement that no car manufacturer is wealthy enough or consumes sufficient to make it worth his while to establish an individual steel mill, but that if the motor car industry divided into two or three groups it could be entirely self-supporting from the extraction of the ore to the finished article.

The usual difficulty in bringing about a big merger is to satisfy the participants regarding the price to be paid for their existing business. In this case, it is stated on the best authority, that the merger having Willys-Overland as the central figure is not going to allow considerations in price to stand in its way. In other words,



Hi Sibley, Motor Age's special correspondent in Mexico, was tendered a Maxwell car by the Buquet Motor Co., El Paso, Tex., for use along the border and in Mexico. This favor came to Mr. Sibley as a surprise. He is shown at the wheel in the illustration

that the Hudson, Chalmers and other companies which it is proposed to unite in this merger are being offered such a generous inducement that it is certain to be accepted.

The situation with respect to those various mergers is now that the reason for their existence is unusual, if not entirely new. Previously, mergers in the car industry have mainly arisen through one firm in an extremely strong position eliminating some competition by absorbing competitive firms of smaller capacity. In this instance, the control or elimination of competition seems to be a quite secondary consideration.

It has been announced definitely that Lewis Kaufmann, president of the Chat-ham & Phoenix National bank, has undertaken the formation of the syndicate to underwrite the securities of the new corporation. The president of the holding company is to be John N. Willys and he has announced that the management of the holding company will be controlled by the motor car interests.

The situation at present is the existence of the General Motors Corp., of which W. C. Durant is president, the United Motors Corp., of which W. C. Durant is president and the new corporation merging the Willys-Overland, etc., of which John N. Willys will be president. This means that the United Motors Corp. and General Mo-

tors will be working hand in hand, if not actually united, and it is firmly believed that there will be at least a close working agreement between the new Willys' merger and the other too. If this proves actually to be true, it will mean that W. C. Durant and John N. Willys will jointly control the great bulk of the motor car business of America.

The Three Combinations

- 1—General Motors Co. includes:
 Buick Motor Co.
 Cadillac Motor Car Co.
 Oakland Motor Car Co.
 Olds Motor Works.
 Jackson-Church-Wilcox.
 Weston-Mott Co.
- 2—United Motors Corp. includes:
 Dayton Eng. Lab. Co.
 New Departure Mfg. Co.
 Hyatt Roller Bearing Co.
 Remy Electric Co.
 Perlman Rim Corp.
 General Motors, United Motors Corp. and Chevrolet Co., linked together through the common presidency of Mr. W. C. Durant.
- 3—New combination, Willys-Overland Co.
 Chalmers Motor Co.
 Hudson Motor Car Co.
 Electric Auto-Lite Co.
 Others not yet announced.

IS ASSEMBLY PLANT A FACTORY?

Louisville, Ky., June 3—Exemption from city taxes for 5 years under an ordinance favoring new industries has been asked by the Ford Motor Car Co. for its assembly plant here.

City Assessor John Buechel is endeavoring to determine just what a factory is under the terms of the ordinance. The Ford company argues that the plant is a factory under the meaning of the ordinance because a car is not a car until it is ready to run, and therefore, in assembling parts at the plant the Ford company is manufacturing cars. This claim impressed Mr. Buechel favorably until a plow company asked exemption as a factory because the parts of the plow are shipped here knocked down.

BRITAIN MAY ISSUE GASOLINE CARDS

London, England, June 1—New regulations limiting the use of gasoline, which is scarce in England on account of the large consumption by the army and navy, will be issued next week. The regulations will take effect as soon as published.

It is said that the amount of gasoline used by the British army in France is equal to the entire consumption of the British Isles in times of peace. The use of cars on Sunday, except under special licenses, will be prohibited in the new regulations, which aim at the suppression of pleasure riding in the United Kingdom. It is probable that even the omnibus lines will be included in the new regulations. The use of gasoline cards, similar to the Berlin bread cards, is being considered.

Parts Makers Join Forces in New Detroit Organization

New Concern to Have Capital of \$10,000,000—
W. C. Rands At the Head

DETROIT, June 3—On the eve of the formation of other great mergers in the industry comes the announcement of the completion of plans whereby several large parts makers in other lines located in Detroit and vicinity are to be combined under the name of the Motor Products Corp., with a capitalization of \$10,000,000 and with W. C. Rands, head of the Rands Mfg. Co. of this city as the president. Incorporated under the laws of New York and with a main office in New York and headquarters here, this corporation as at present outlined takes in the Rands Mfg. Co., the Vanguard Mfg. Co., the Diamond Mfg. Co., and the Universal Metal Co., all of Detroit, and the Superior Mfg. Co., Ann Arbor, Mich.

The Rands Mfg. Co. is a very large concern making at present windshields, tops and steering wheels, having begun this activity in 1900. Vanguard makes a specialty of windshields, and has been located in Detroit for about 3 years, during which time it has shown a remarkable growth. The Diamond Mfg. Co. makes metal stampings, such as radiator fittings, radiator shells, hubs, hub caps, manifolds and tubing. In a similar line is the Universal Metal Co., this concern having a large tube mill and making a variety of metal parts as well. The Superior Mfg. Co. is also a big windshield maker, besides doing business in other accessories necessary to motor vehicles.

Stock to Be Marketed

It is understood that the stock of the new \$10,000,000 holding company will be put upon the market very soon. It is said to have been heavily oversubscribed, there being 100,000 shares of no par value. The underwriting has been done in New York.

The officers of the Motor Products Corp. are W. C. Rands, president; C. F. Jensen, president of the Vanguard company, vice-president and supervisor of purchasing; H. H. Seeley, head of the Superior company, is vice-president and sales manager; D. B. Lee, vice-president of the Diamond company, is treasurer and general manager; M. L. Brown, treasurer and manager of the Universal Metal Co., is secretary. The board of directors consists of these men and R. R. Seeley, who is to be the Motor Products Corp. production manager.

W. C. Rands states that while it would appear that windshields would be one of the most important products of the new combine, the intentions are to branch out into several other fields of parts manufacturing so that in the end windshield making will only be about one-third of the

concern's total activities. Later it is intended that the somewhat scattered plants are to be brought together in one very large institution here, building plans looking to this end already being under way.

TO BUILD \$5,000 CHASSIS

Philadelphia, Pa., June 3—The S. S. E. Co., a \$5,000,000 corporation, composed of New York and Chicago capitalists, has

Durant Made President of General Motors Co.

Leland Elected Director to Fill Vacancy Left By Strauss

DETROIT, June 2—All doubt as to where the control of the General Motors Co. lies was dispelled by the election of W. C. Durant to the presidency at the meeting of the directors in New York yesterday, succeeding C. W. Nash, resigned. Coincident with this action came the election of W. C. Leland, vice-president and general manager of the Cadillac Motor Car Co., to the board of directors of the giant combine to fill a vacancy occasioned by the resignation of Albert Strauss of the banking firm of J. & W. Seligman & Co., one of the banking interests which financed the General Motors following its difficulties several years ago and which was not favorable to the Durant faction. Another director, J. J. Starrow, of the firm of Lee, Higginson & Co., another of the banking interests opposed to the new control, has also resigned. Mr. Starrow did not attend the meeting.

Mr. Nash remains a director of the concern, although his resignation as president comes as no surprise to those in a position to know, since dominance by the new interests are understood to have made his retention of the presidency untenable for certain reasons. Mr. Nash's connection with General Motors dates back to 1910, when, coming from the carriage and implement business, he was made vice-president and general manager of the Buick Motor Co., replacing Mr. Durant in that position. In 1912 Mr. Nash was elected president of the entire combine, and the remarkable growth and prosperity of General Motors is ample proof of his ability as an organizer and manager of so large a combination. He is regarded as one of the foremost figures in the industry today and it is hinted that he will soon be identified with other interests in the field.

purchased ground in the vicinity of the Hess-Bright plant in Kensington on which it will build a large plant for the manufacture of high-grade cars. Back of the new Philadelphia industry are Victor Lee Emerson, designer of the Emerson engine, formerly president of the Emerson Marine Engine Co., and holder of a number of patents covering gasoline engines; E. E. Smathers, a New York capitalist of prominence, and C. B. Shaeffer, of Chicago, head of the Shaeffer-Smathers Oil Co. Mr. Emerson is general manager, Mr. Smathers president, and Mr. Shaeffer vice-president. The company is capitalized at \$5,000,000, all paid up.

Buildings and equipment alone will cost close to \$1,000,000, in addition to about \$250,000 already spent in getting the enterprise under way. The company owns and controls its own patents and will make everything going into the finished car except the tire and electrical equipment. Mr. Emerson estimates the first year's output to be \$5,000,000.

It was boasted that the car will be the highest priced of any made either in this country or in Europe. The chassis alone will cost in excess of \$5,000, it is said.

The main idea will be to turn out a highly-scientific and flawless car regardless of price. Two of the principal features are to be nimbleness and lightness. So pronounced is the latter feature that it will move while standing with a pressure of less than 3 pounds.

PULLMAN TO MAKE TRUCK

York, Pa., June 2—The manufacture of a 1,000-pound light delivery truck is the latest venture of the Pullman Motor Car Co. Two standard bodies are provided in its manufacture, the express type, selling for \$750, and the panel type, at \$775. The truck is brought out on a special chassis which will hold maximum loads. The wheelbase is 114 inches. The four-cylinder motor, 3¼ by 4¼ inches, develops 32 horsepower.

INCREASE PACKARD STOCK

Detroit, June 3—Today the stockholders of the Packard Motor Car Co. authorized an increase of \$5,000,000 in the common stock of the concern, bringing the total capitalization to \$21,000,000, of which \$8,000,000 is in preferred stock.

At this meeting a new office was created, this being chairman of the board of directors, which new position will be filled by Henry B. Joy, who retires from the presidency in favor of Alvan Macauley, formerly vice-president, as noted last week.

Oldfield Breaks Record

Circles Chicago Speedway at
113 Miles Per Hour
in Christy

Eliminations Hampered by Rain—
DePalma After Hour Record

CHICAGO, June 6—The skies opened before noon today and melted away the activities at the Maywood board oval, which had been the scene of some fast driving and track records for the last 2 days. Sunday Barney Oldfield got out his venerable front-drive Christy and attempted to break the world's speedway record of 118 miles per hour set by Chassagne at Brooklands in 1913, but the old warhorse developed a case of heaves and the best Barney could get out of it was 113 miles an hour, when he circled the course in 1 minute 3¾ seconds. The Christy shows its age more every season and looks as if it must have been doing service when Barney got his first job as a waiter in an insane asylum several years ago. With Doctor R. R. Duff towing the Christy from the starting line, Oldfield made three attempts on Sunday and after the third in which he came stuttering down the homestretch on two cylinders, slowing up because of spark plug trouble. Oldfield wants to go on an hour before the big race starts on Saturday in a final dash against time and hopes to win the \$1,000 prize for beating Chassagne's record, and possibly the \$1,500 prize additional for being the first driver to circle the Maywood track in 1 minute.

Twenty-Mile Race Sunday

A 20-mile race between the two Crawfords driven by Dave Lewis and Art Johnson, and the Burman Special driven by Jack Gable also featured the track on Sunday and was the climax of what would have been a rather tedious afternoon of sport had it not been for Oldfield's record breaking. De Palma had his Mercedes on the track for a few circuits.

Yesterday Ralph de Palma and Dario Resta qualified their cars, the Mercedes averaging 107.4 miles per hour and the Peugeot 105 miles per hour. This gives de Palma the pole at the start next Saturday afternoon. Only one other car was on the track during yesterday afternoon. This was D'Alene's Duesenberg, a new car which was built originally for O'Donnell's use. At that the Californian turned several laps at an average of 97 miles per hour. The Duesenberg which D'Alene drove at Indianapolis has been purchased by George Buzane, a Chicago driver.

Aitken and Merz, who are in charge of the two Peugeots owned by the Indianapolis speedway, arrived yesterday with their cars and were scheduled to practice today had not the weather interfered. Anderson and Wilcox also have arrived with

their Premiers and at present the only notable absentees are the three Frontenacs and a few eastern entries.

It is expected that the Klein Specials will arrive today and Tom Orr, who was on the Maxwell team last year, is here with hopes of getting on as Klein's team mate. The second Sunbeam is now enroute from New York.

Fred Wagner hoped to qualify these twelve cars today before Ralph de Palma took the course in an attempt to break the world's hour record. It was Ralph's intention to start at 2 o'clock this afternoon, but it was called off on account of the track being wet.

The following is the complete entry list which closed at midnight June 1 and tomorrow and Thursday five will be weeded out at the elimination trials since only 33 are allowed to start under the A. A. A. ruling:

Driver—	Car—
De Palma	Mercedes
Resta	Peugeot
Mulford	Peugeot
Aitken	Peugeot
Merz	Peugeot
O'Donnell	Duesenberg
D'Alene	Duesenberg
Buzane	Duesenberg
Newgard	Duesenberg
Milton	Duesenberg
Oldfield	Delage
Christians	Sunbeam
Not Named	Sunbeam
Alley	Ogren
Vall	Hudson
McCarthy	Hudson
Chandler	Crawford
Lewis	Crawford
Johnson	Crawford
L. Chevrolet	Frontenac
G. Chevrolet	Frontenac
A. Chevrolet	Frontenac
Henderson	Maxwell
Rickenbacher	Maxwell
Wilcox	Premier
Anderson	Premier
Klein	Klein Special
Not Named	Klein Special
Gable	Burman Special
Watkins	J. J. R. Special
Thompson	Olsen Special
Brown	Julian Special
Stringer	Hotchkiss Special
Rawlings	Duluth Special
Adams	Adams Special
Halbe	Osteweg
Mueller	Dans l'Argent
Delno	Richard

Racing Events

*June 20—100-mile race, Galesburg, Ill.
June 23-24—Interclub reliability run, Chicago.
June 26—Des Moines, Ia., speedway race.
July 4—Minneapolis speedway race.
July 4—Sioux City speedway race.
*July 4—Track meet, Coeur d'Alene, Ida.
July 4—Road race, Visalia, Cal.
July 4—Track meet, Elmira, N. Y.
July 15—Omaha, Neb., speedway race.
July 15—Track meet, North Yakima, Wash.
July—100-mile track meet, Burlington, Ia.
August 5—Tacoma, Wash., speedway races.
*August 11-12—Hillclimb, Pike's Peak, Colo.
August 12—Track meet, Portland, Ore.
August 18-19—Elgin road race.
August 26—100-mile track meet, Kalamazoo, Mich.
September 4—Track meet, Elmira, N. Y.
September 4—Indianapolis speedway race.
September 4—Des Moines, Ia., speedway race.
September 4-5—Track meet, Spokane, Wash.
September 16—Speedway race, Providence, R. I.
September 29—Track meet, Trenton, N. J.
September 30—New York, Sheepshead Bay speedway race.
October 7—Philadelphia speedway race.
October 7—Omaha speedway race.
October 14—Chicago speedway race.
October 19—Indianapolis speedway race.
October 21—Track meet, Kalamazoo, Mich.

*Sanctioned by A. A. A.

Movie Race Benefit

Kennerdall Gives A. A. A.
Sanction Gratis—Receipts
of Actors' Fund

Stutz Driven Mile in 53 Seconds
Flat—Hansen Gets Oldfield Cup

LOS ANGELES, Cal., June 2—A novel program was offered at Ascot Speedway May 30 when the motion picture studios of southern California staged a monster gymkana for the benefit of the Actors' Fund of America. There were speed events and comedy numbers galore.

The races were sanctioned by the A. A. A., said sanction being issued free of charge by Chairman Kennerdell of the contest board on account of the benefit feature of the meet.

Frank Good on a Stutz drove an exhibition mile in 53 seconds flat. Arthur Hansen, of the Ince studios, won the 10-mile amateur event which carries the championship of moviedom and the Barney Oldfield cup. Hansen drove a Mercer and his time was 10 minutes 6 seconds. Ashton Deachalt, of the American Film Co., on a Premier, won second and Wallace Beery, of the Universal, on a Mercer, third.

There was a comedy race in which the clowns of the Keystone and L. K. O. companies competed. This was one of the funniest events ever staged. The comedy producers had their cars rigged up with smoke pots, bombs and other smoke and noise-making equipment, and in the race the drivers stopped to present each other with bouquets and to engage in slapstick battles.

The big event of the day was the motor fashion show. In this event there were 25 cars entered with the queens of the film industry driving. They paraded in front of the judges' stand several times and the winners were selected by a jury of awards, the combination of car finish and costume of driver being the only features considered. Miss Pracilla Deam, of the Kalem company, won with her Buick roadster. The car was upholstered in pink and white chintz with top boot and tire cover to match. Miss Dean wore a pink costume and the Buick name plate was done in a beautiful floral design carried on the hood.

WORKING ON K. C. SPEEDWAY

Kansas City, June 2—A triple-radius speedway 1½ mile in length is now under construction in Kansas City, the work being carried on under the management of Jack Prince. Present plans contemplate finishing the track in time for a national race on July 22. A grandstand 1,000 feet long is being erected which will seat 30,000 people.

The track will be of dobenoil construction and will vary in width from 50 to 70 feet. All turns will be properly banked. The location of the speedway is at 85th and Prospect, which is accessible by one of the best pike roads in the state, coming straight out of Kansas City. It is estimated that within a radius of 50 miles of Kansas City 25,000 motor car owners can be found.

The company will be known as the Kansas City Sport Speedway. F. W. Merrill, millionaire lumberman and extensive real estate holder, and Frank E. Lott, ex-president of the Kansas City Automobile Club and a real estate holder, are promoters of the plan.

DES MOINES HOLDS DERBY

Des Moines, Ia., June 2—Over 4,000 persons saw the Iowa derby and other contests at the Des Moines speedway on Memorial day. W. J. Barndollar, driving a Clergy Special, won the derby, a 20-mile event, by negotiating the distance in 16 minutes, 8½ seconds, or at the rate of 1.2 miles per minute. John A. Thompson, in a Ford, was second, and Royal Duke, piloting another Clergy Special, finished in third place.

Six cars started the race, but only the three money winners finished. Phil Schaffer, with a Chevrolet Special; Homer Stanley, with a National, and B. F. Antill, with a Staver, were the entries which failed to finish. Stanley and his National gave Barndollar a close race until the former was forced out in the eleventh lap with a broken valve pin. Lewis Clergy won the 10-mile race for Des Moines drivers only in 8:29½. Thompson in his Ford was second and Royal Duke finished third.

Predict Record Crowd

Next Saturday's Race Expected to Set New Attendance Mark

How to Get There—Where to Buy Tickets

CHICAGO, June 6—With the city's hotels choked to their capacity by reason of many thousands of visitors here for the two national conventions, and with a prospect of decision being made as to who will represent the Republican and Progressive parties in the coming race for president being settled early Saturday morning, officials of the Chicago Speedway look for a record-breaking attendance when Starter Wagner waves the flag that will send one of the largest fields of entrants away on the 300-mile race to be held 4 days hence.

For that reason the streets and boulevards leading to Speedway Park in Maywood, 11 miles west of downtown Chicago, will be choked with race fans next Saturday, and to make it easier for them to reach the park whether they go by motor car, electric or steam railway, Motor Age gives a map that shows the principal routes to be used in getting to the track. Either Jackson boulevard to Garfield Park and thence by Washington boulevard west, or following Washington boulevard all the way out, will be the two most popular routes for motorists. The Metropolitan elevated will run trains to Maywood where buses will carry the visitors to the track, and the Illinois Central railroad will run frequent train service between the loop and the speedway.

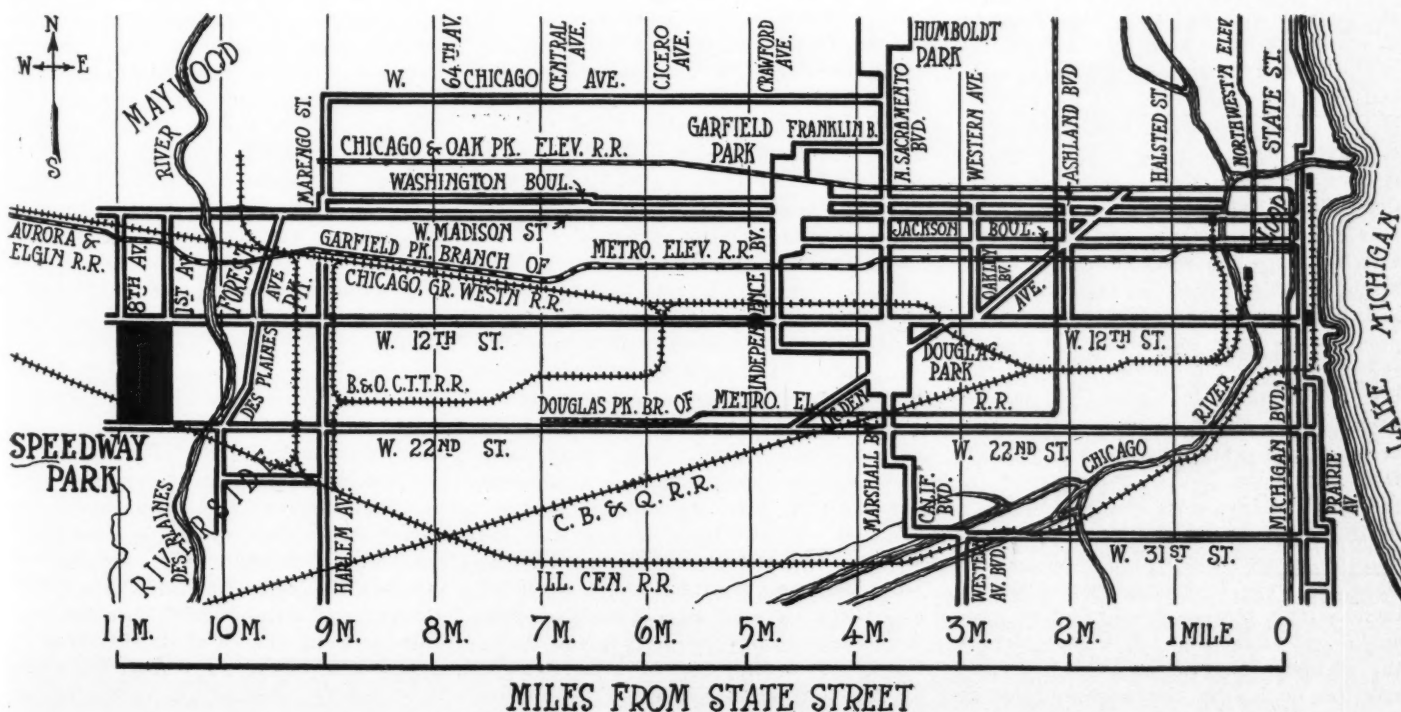
For the benefit for out-of-town visitors tickets have been put on sale at the Blackstone, Sherman, LaSalle, Planters, Congress, Statford, Morrison, Kaiserhoff, Palmer House, Fort Dearborn and Great Northern hotels. Tickets may also be procured at the Chicago Automobile Club, Chicago Motor Club or from the speedway headquarters in the Marquette Bldg., corner of Dearborn and Adams.

In the club section, which is directly opposite the judges stand and on the starting line, boxes seating six persons sell for \$60. There are eight sections to the grandstand on the homestretch, three on one side of the club section and five on the other. In four of these sections, that is, three immediately in front of the pits and one just north of the club section, chair seats are \$5 each, while the box seats in front of these sections sell for \$10 each. In the sections at the extreme ends of the grandstand, seats are \$3.50 and the boxes \$42, while in those sections second from each end of the stand, chair seats are \$4, and boxes seating six, \$48. Front row paddock parking spaces are \$10 and second row \$5. Each occupant of a car in the \$10 parking space must pay \$2 general admission and those in the second row \$1.

The gates will open at 10 o'clock and the race will start at 1:30 p. m. No money will be refunded on tickets but in the event of postponement all tickets will be honored.

MOTO-METERS AT INDIANAPOLIS

Chicago, June 6—Through an oversight in making up the equipment table for the cars that participated in the sixth annual International sweepstakes at Indianapolis, Ind., Memorial Day, May 30, mention was not made of the fact that all were equipped with Boyce Moto-Meters.



How to Care for the Clutch in Your Car

Diagnosis of Ailments and Simple Home Remedies

By Wallace B. Blood

HOW many motorists there are who will spend hours adjusting the valves in their motors to a clearance measured in thousandths of an inch, faithfully stand over their carbureter until the motor is purring like a milk-fed kitten, inflate their tires to the exact pound pressure, and then start out with a clutch that will either wrench the necks of the passengers with its ferocity or mildly and hesitatingly take hold, with an accompanying odor of burning leather. The clutch is a neglected item and the reason can be attributed to that characteristic of man in which he will first do the work that is staring him in the face and then trust to luck in the behavior of the inaccessible parts.

It is important that clutch troubles be readily recognized and remedied. The power and speed of the entire vehicle may be seriously affected by improper clutch action. The same ailments will crop up in all types, and the most important of these is a too harsh, or grabbing, clutch, simply because operating a clutch in this condition places a severe strain on the gears, bearings, tires, in fact on the entire power transmission system. It is almost as important to fix a grabbing clutch immediately as it is to change a punctured tire. Surely, running on a flat tire can be no harder on the mechanism. The other troubles, easily noticed, are failure to engage properly, slipping, and poor or slow release which results in spinning with the resulting difficulty in shifting gears.

The types of clutches to be considered in this article are the cone, the dry-plate, the multiple-disk and the planetary transmission such as is used in the Ford. Of course, each type employs frictional material as a facing and will not act properly if this material becomes worn. Therefore the first thing to look for in clutch trouble is worn surfaces.

Cone Clutch Types

In the most commonly used type of cone clutches there is a main clutch spring operating within a shell between the clutch and gearset. In other types pressure is produced by four coil springs carried on the clutch spider, as in Fig. 2, in conjunction with the main spring, the smaller springs being fitted to insure equal pressure over the whole surface and freedom from chattering. It is evident that, as the clutch facing wears and the cone seats itself deeper, the tension on these springs will be proportionately reduced. Provisions are made in many constructions to increase this tension by turning up nuts on the end of the bolt which goes through the spring. If your car is of this construction and your clutch slips, take up these bolts evenly until the trouble is

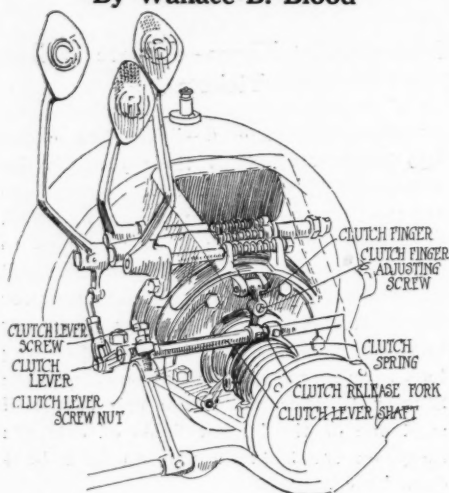


Fig. 1—Adjustment of the Ford clutch is a very simple process. An explanation of the operations necessary to perform will be found in this article

eliminated. Another common construction embodies the fitting of a grease cup carried by the clutch cone. In such design it is imperative to keep this cup filled, as it is the only means of lubricating the clutch spindle. A dry clutch spindle may cause either a grabbing or a slipping clutch. A common location of this grease cup is shown in Fig. 2.

Leather Is Trouble Maker

The most common cause of faulty clutch action is some defect of the leather facing. This may be compressed and made hard, or burned and charred by heat from slipping. A clutch must always slip. This is its function in setting the car in motion. Therefore it is impossible to avoid burning of the facing and these facings must necessarily be occasionally replaced. Leather also has a limited life and becomes hard and cracks with age. Then, too, the clutch spring may have become broken or weakened to such an extent that it does not have the power to keep the surfaces engaged with sufficient pressure.

If the friction surface becomes hard, in other words loses its resiliency, when it is brought in contact with the metal cone, it creates a sudden tight pressure and the clutch grabs. To insure even clutch application the leather must be soft and pliable. If the leather has not become unduly worn or burned, its resiliency may be brought back to a sufficient extent by the application of neatsfoot oil, which should be allowed to soak into the leather. Never use machine or lubricating oil. They are very injurious to any form of friction material used in clutch facing. Kerosene may also be used to soften the leather. In several designs the use is made of flat steel springs inserted in slots in the cone between the leather and the

surface of the cone. These are designed to give a delicate application of the leather onto the cone before the clutch is fully engaged, tending towards very flexible action. Such springs can be inserted in any cone clutch by chipping places for them on the face of the cone.

When a cone clutch slips and an examination shows that the leather facing is not worn and the spring tension is correct, then the trouble can undoubtedly be found in a coating of lubricating oil on the leather surface. The only way this oil can be removed is by applying some agent that will absorb it and the job can be done equally as well by rubbing into the leather a quantity of Fuller's earth, powdered borax, or powdered yellow sulphur. To facilitate the insertion of the absorbing agents onto the clutch face it is a very simple matter to cut a stick of wood the proper size to fit against the back of the front seat and hold the clutch pedal open. To avoid needlessly spilling the material over other parts of the mechanism—remember Fuller's earth and sulphur absorb oil and may cause harm if allowed to enter bearings—fold a piece of paper into a trough and pour the powder through it onto the leather. Never use rosin for this purpose. It will melt when heated and glaze the leather. It will eventually be the cause of more slipping instead of the remedy for it.

We now assume that you have tried the above methods to remedy your clutch troubles without success. The only thing left to do is to replace the clutch leather or the clutch spring, whichever is causing the trouble. If an examination of the leather shows it to be in good condition it is a new spring that is needed. If the leather is hard, burned or cracked, and will not yield to the prescribed treatment it must be replaced.

Best to Buy Made-Up Leathers

If you decide that the leather must be replaced we would suggest that you purchase a new one from the factory. It is possible to cut one out and build it up, but all-in-all it is a tedious and usually unsatisfactory process. The manufacturer has also tried out various materials and knows the best. Of course, it is necessary to dismantle the clutch and remove the old leather. Before riveting the new leather in place it should be made as pliable as possible by soaking it with neatsfoot or castor oil so that the liquid penetrates from surface to surface. Do not soak the leather in water with a view of having it shrink tightly onto the cone. There is a big chance of its shrinking too tightly and pulling away from the rivets. It is best to purchase the leather in endless form, that is sealed at the ends so

that it will fit perfectly over the cone.

First place the leather on the cone as shown in Fig. 3, with one side flush with the larger diameter of the cone. Then pry the leather on until it is evenly fitted on to the metal surface. If the leather hangs over the small-diameter edge of the cone it is not on far enough and should be pried further onto the taper. No trouble should be experienced in fitting the leather by use of the hands only.

If there is access to a vise the riveting operation is a simple process. In Fig. 4 is shown a simple method of performing this work on the head of a large diameter bolt. The holes in the leather should be countersunk deep enough so that the rivet heads will be below the surface. Enough leather should be maintained under the rivets, however, so that there will be no danger of them pulling out. After the facing is applied the high spots should be rubbed off with sand paper or the edge of a piece of glass.

Dry Plate and Disk Clutches

Multiple-disk or three-plate clutches are subject to the identical ailments which afflict the cone. If, in a multiple-disk clutch in which all the disks are made of metal, there is not proper release, it is because the plate surfaces have become rough and tend to stick together. The plates should be smooth and of equal thickness at all points on the surface. If the plates become worn thin in spots and remain thick in others there will be unequal engagement and consequently grabbing. If the clutch is of the type which runs in an oil bath, care must be taken to keep the oil fresh and clean. Heavy or gummy oil will cause the plates to adhere and the clutch will spin. If difficulty is experienced in getting the gears to mesh in a car equipped with a multiple-disk clutch running in oil, the trouble will probably be found under the above head.

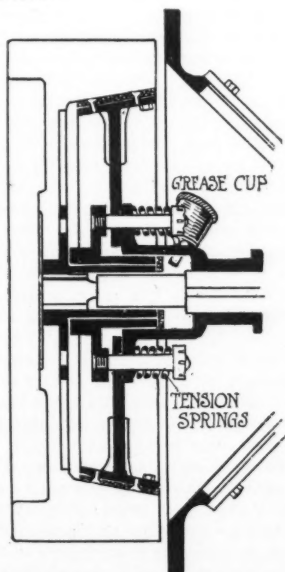


Fig. 2—Section of cone clutch, illustrating application of tension springs on spider of clutch cone and common location of grease cup for oiling spindle

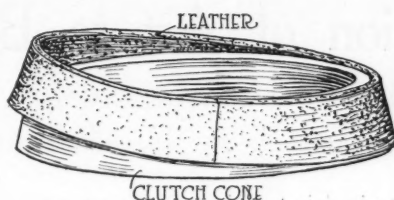


Fig. 3—Before applying clutch leather it should be thoroughly saturated with neatsfoot oil or kerosene. The surplus oil on the surface should be wiped off and then the leather fitted at once to the clutch cone. To facilitate matters one edge should be applied first as illustrated

It is a good thing to drain the oil from the clutch case about once every two months, flush thoroughly with kerosene and put in new oil. Leave kerosene in the case over night if possible and in the morning jack up a rear wheel, start the motor, engage high gear and push the clutch pedal in and out until you are convinced that the liquid has thoroughly soaked the plates. Slippage in such a clutch is generally due to a weak spring, distortion of the plates, or use of too heavy oil. Never use an inferior grade of oil in a multiple-disk clutch housing. The friction heat will carbonize the oil and pit the plates or coat them with a gummy carbon paste. In most cases a simple adjustment is provided for disk clutches through the aid of adjusting nuts carried around the periphery of the clutch housing.

Worn Discs Must Be Replaced

In the dry-plate type half or the disks are of a friction material—generally a woven fabric containing asbestos. When these become worn they must be replaced and must be purchased already made up either from the factory or a supply house. The kerosene treatment should also be applied to this type at frequent intervals.

In the three-plate construction a single large driven member is used, faced with rings of friction material, operating between two flat surfaces, one connected with the motor and the other with the gearset. With such a construction, owing to the large diameters of the friction surfaces, it is necessary to employ a clutch brake to stop the rotation. Adjusting nuts are provided to take up wear in a similar way as in the multiple-disk. Wear of the surfaces and weakened or broken springs are the usual causes of trouble.

Planetary Adjustments

In the early days of motoring planetary transmissions were extensively used in all grades of cars principally because of their ease in control. The Ford transmission is typical of this design. The clutch used is the multiple-disk type and the adjustment is very simple. By removing the plate on the gearset cover under the floor boards at the driver's feet an adjusting screw is revealed on the end of the clutch finger—see Fig. 1. To make the adjustment remove the cotter pin and turn up the set screw about one-half turn with a

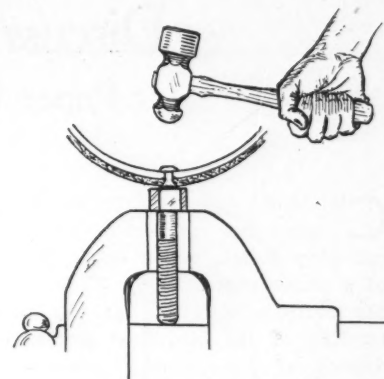


Fig. 4—Riveting should be done with care. A simple method is shown in the illustration above

screw driver. Turn the clutch over and repeat the operation on the other finger set screws. Be sure to give each the same number of turns and don't fail to replace the cotter pins. After considerable usage of the car it will be necessary to replace the clutch disks.

If the car has an inclination to creep forward when cranking it indicates that the clutch lever screw shown in the figure, which bears on the clutch lever cam, has become worn, and requires an extra turn to the right to hold the clutch in neutral position.

Selling Cars by Wireless

SEATTLE, Wash., June 3—Just about the proudest dealer in the Pacific Northwest at this time is Jack C. Garner, Chalmers distributor, this city, and all because he is the first dealer in Seattle to sell a car by Marconi Wireless Telegraph.

It all happened May 20, when a little blue-coated messenger boy rolled off of a bicycle in front of the Chalmers' showroom and stuck out a red envelope to Garner and said, "Sign here, please." Jack signed the messenger boy's book, and noticed that the red envelope was a Marconigram, the first he had ever received, and naturally he was rather excited. Quickly opening the message, he saw that it was from Juneau, Alaska, and signed, Alaska Auto and Supply Co. The body of the message read: "What arrangements about payment to have Chalmers thirty shipped on Evans Sunday."

You can imagine the excitement of a dealer who has been used to talking hours to a prospect before daring to ask him to sign on the dotted line, to have an order literally forced upon him by a wireless. Needless to say, Mr. Garner immediately Marconied back to the Alaska firm that all it would be necessary for it to do was to have the Juneau bank guarantee payment for the car, and that it would then be shipped at once. In less than 3 hours from the time Gardner wired the Alaska firm, he received another wireless wire stating that a certain Seattle bank would guarantee payment.

Discuss Relation of Art to Body Design

Paper by W. B. Stout Starts Lively Argument at
Mid-West S. A. E. Meeting

CHICAGO, June 3—Fifty engineers discussed the relation of art to motor car body design, which forms the subject of a paper presented by W. B. Stout, of the Scripps-Booth Co., at the quarterly meeting of the Mid-West section of the Society of Automobile Engineers at the Chicago Automobile Club last night. In the discussion that followed the paper the point was brought out by Mr. Stone, of C. Stone & Sons, Chicago, body builders, that there was room for great improvement by builders of chassis along the lines of making better arrangements for high-class custom-built bodies.

Such things as the angle of the steering wheel, the arrangement of the pedals, etc., often limited very much the scope of the body builder in working individual designs. In refuting this, a number of representatives of the car makers arose to the occasion with the statement that in most instances the angle of the steering column was changeable and the pedals were adjustable.

Henry Farrington, of the Thomas B. Jeffery Co., presented a paper entitled "Problems Involved in the Choice of a Motor Truck," and discussed the points that the prospective truck buyer should take into consideration in selecting a commercial vehicle for his particular service. Mr. Farrington presented the advantages of the four-wheel drive as against the rear-drive truck and in closing made a plea against manufacturers and salesmen rating the carrying capacity of their vehicles at too high a mark for all conditions of service, as it is the tendency of the

user to load it to this capacity no matter what the operating conditions might be.

E. D. Blakeley, of Sears, Roebuck & Co., presented a description of a new type of high-compression engine of his own design which at present is applicable only for stationary use and is developed for small isolated plants, but which has possibilities of adaptation to truck service. Although of high compression, it varies from the Diesel type but, like the latter, is capable of running satisfactorily on very low-grade fuels.

Blakeley gave a demonstration of his design with a motor temporarily installed in the Automobile club garage, in which he started it cold on kerosene and later ran it on very low grade of oil and also on olive oil. The unusual features of the engine are that it has neither carbureter, electric ignition, or any especial ignition features. Even with the low-grade fuel there was practically no smoke and very little odor. A description of the engine will be published in a later issue of Motor Age.

The old officers of the section were re-elected unanimously. Inasmuch as the section has been organized for less than a year, the first administrative year was less than 12 months, and the old officers therefore were eligible. Those re-elected were F. E. Place, of the Buda Motor Co., chairman; J. DeCou, of the Thos. B. Jeffery Co., vice chairman; Darwin S. Hatch, Motor Age, secretary; C. W. Stiger, Stromberg Motor Devices Co., treasurer.

Following is given, in part, the two set papers of the meeting:

Art and the Motor Car

By William B. Stout
Scripps-Booth Co.

ART is the science of eye-appeal; the appearance-basis of attractiveness.

If one can build into a commercial product an appeal to the eye he then has established the first point of salesmanship, which is impression.

The designing of a motor car is no longer a task for the engineer alone. There was a day when the motor car was merely a mechanism for traveling from place to place, a machine on which seats were mounted that one might enjoy the sensation of swift travel and the novelty of mechanical progress. Today the sensation is old and the novelty become the usual.

With the world's acceptance of the motor vehicle and the perfection of car machinery a new thing was needed to carry appeal further than mere mechanical construction, and comfort and performance stunts were made a basis of sales. Freak demonstrations and misleading economy tests were tried and succeeded in attracting. Only recently has the value of eye-appeal been recognized, and art even considered in relation to motor vehicles.

The motor car today is become a part of the home equipment, which, standing at your door, reflects your personality and the taste of the home within. The man of judgment chooses a car which he is proud to have seen in front of his home, this very item of seeing getting us back again to the idea of eye-appeal.

Madame wants a car which presents a certain style. The car is to her if you will, a coat to be gotten into at journey periods, which by its outer style and artistry reflects the taste and standing of her within. If the car does not look the part to her, the sale is off, no matter what the merit of the mechanism.

Style has come to the motor car.

Reliability is the easiest thing to design into the present-day motor car; and is that item most present in all cars. Any modern motor car will travel from New York to Frisco with a satisfactory degree of reliability, and some of the cheap cars with greater mileage per day than the heavy-weight more expensive constructions. The

difference then between one car and another, after a certain ultra-cheap class is passed, is in passenger comfort and the self-respect of ownership.

Appeal of Appearance

This self-respect or pride-value in a car depends upon the authority of the vehicles design, its social standing, and the degree of art involved in its make-up; the appeal of its appearance.

The art of motor car building is thus resolving itself more and more into a studio task for the artist and for the coach builder in his atelier working to produce into the new models a new appeal of the eye, a new attraction of beauty.

If a car is designed for a certain excellence or standard of mechanical performance, then its body lines and contours must be so disposed as to proclaim and suggest that performance to the observer and to the prospective buyer.

If a car is designed primarily for comfort, then the art lines should suggest comfort; if the main feature of the design is the motor, then special attention should be given to the lines to emphasize in the observer's mind, the importance of what is under the hood.

There are certain definite rules and principles to art which rarely have been applied to motor car design, but which are vitally important. These principles may be used by the designer with as much authority as the engineer assumes in the use of his slide rule, or the teacher in his statement that 2 and 2 make 4; yet these very rules have not been made use of in motor car layouts until the past two seasons. Even yet few companies are employing artists on their engineering staff.

The day will come when bodies will be designed by artists of national reputation in this line who spend all their art study to make motor car bodies express in their lines, contours, and arrangement, the individuality and performance that the car possesses and that the sale and advertising departments want to express to the public in handling that car commercially. If the car in body lines backs up, in its appeal, the statements of the advertising, and if the performance and life of the car backs up the appearance, then will that car be a success, and the marketing of it to the people be accomplished along lines of least resistance and cost.

Many a motor car firm today is spending thousands of dollars a year in advertising to market an appealing body design on a good chassis which might save much coin of the realm by spending a small fraction of this on the hire of an artist experienced in body work to work out a body appeal consistent with the car's performance and sales field.

There is a real commercial value to an unique design of car—a car out of the usual—which has been lost sight of by many manufacturers. This is the advertising value of every car running.

All cars look alike to most folks, merely because makers have followed each other and have made them all look alike. When one car or another goes by the public does not notice, for it does not distinguish it from the rest. One might hang a sign from end to end to proclaim the name of the make, but the owner would not allow it.

If the design be original so that even the man on the street names it as it passes, the

car itself is a sign as long as its own wheel-base and as insistent as its own appearance, proclaiming its makers and where it may be purchased, its eye-appeal being the thing which sets it apart.

The rules of appeal in body design are not intricate and are very easily understood. All of the principles are, of course, not handled in the space of this paper, nor can their application to individual requirements be detailed for different cars not deficient in this regard, but the main ideas can be outlined.

One generally speaks of the "lines" of a car. It is true a car has lines but the lines are not the greatest attraction basis of design.

Appeal of Beauty Is Sex Appeal

The appeal of beauty is primarily and psychologically a sex appeal. All of our ideas of beauty standards come from nature and our sex feeling. We might speak of the human figure or the face as having lines, but the profile of the face for example, is not the most appealing view. The profile shows the lines of the face in a flat, uninteresting perspective. There is no action to the profile and the face is rarely seen in this position.

A straight front view of a face, however, in a strong light shows almost no outlines, only edges of shadows. Deep shadows imply and suggest what may be hidden, arousing the imagination, while the outline of the shadow adds to and directs the trend of this suggestion.

The same is true of a motor car. Too often the profile of a straight-side view of the car is laid out on the board quarter or half size and the art "lines" judged from this view. This is a view never gotten by the passer-by and if it were possible to see this view there would be no life nor action to it and hence no appeal. All appeal to beauty sense is by suggestion or implication. Mere lines cannot suggest to nearly as great an extent as masses and edges of shadows.

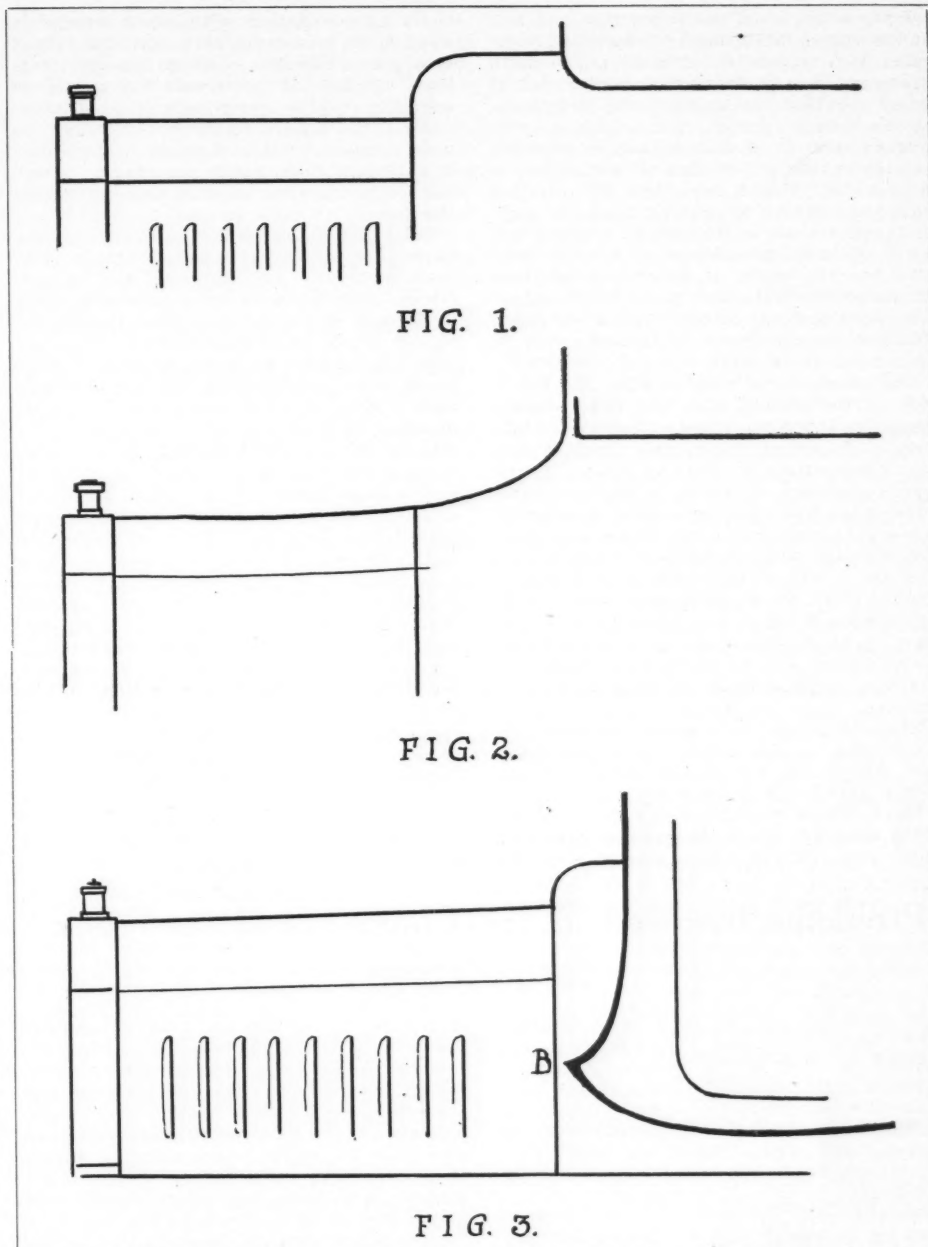
In with the shadows should be included the reflections which furnish new suggestive edges leading on the subconscious reasoning which gives us our final appeal-decision. This is why a newly finished, highly polished body presents such an extreme appeal, compared to the same car finished dull unless that car has been designed primarily for dull finish by having contours which make up for the lack of reflection-suggestion.

In the human figure, lines melt into curves and surfaces, and these into accents—such as the nose or eye sockets—and all flat surfaces or even rounded curves which are always uninteresting as requiring no imagination to solve—are given interest by color or shadow accents.

A well designed car body may be studied for hours like an oriental rug for color, or a picture for draughtsmanship, and will keep its appeal through your subconscious analysis of the principles of art involved. Types of bodies built a few years ago have lost their appeal because they were not based on correct principles of art, as ragtime music loses its attraction after a time for the same reason.

In nature one thing grows from another, like the branches from the tree trunk, and the twigs from the branches. The newer streamline bodies aim at this principle in having lines continuous from front to rear with no break, one growing out of the other, but these are pleasing only to the extent that other principles as well have been followed.

Fig. 1 shows a hood and cowl with a definite break between these parts—a reverse curve which, to look right, would necessitate a hood of different color from the cowl and body, to give a reason for the break. The second sketch shows the cowl and body lines growing out of the hood lines, first intro-



Three types of body lines

duced into this country by the Hudson, I believe, and one art reason for the great appeal of Hudson body design. The limousine top for instance in this make of car did not look like an attachment nor a box set on a touring car, but by being continuous in line with the lower design, was part and parcel and integral with the lower section. With the winter top idea being adopted by so many car makers obtaining this idea of line continuity is one of the greatest problems on the streamline curved-top bodies.

We have learned, however, that shadows and reflections are more important than mere lines, and that one line must grow from another or from a focusing curve. It has also been generally admitted that horizontal lines suggest speed, and vertical lines stability.

To suggest speed the eye must first alight on the front end of the car and then travel back. Horizontal lines, once the eye is sent to the front end, will help to carry the eye back and for this purpose are necessary, but are useless unless the eye starts at the right place. This illustrates the reason for the nickeled radiator or unusual fender arrangements in front on several of the better cars. The Oakland has used the prominent radiator feature for some years, while the

Paige in the newer models gains front end attention from an unusual front shape and fender splash. Packard and Hudson gain attention by unusual radiator caps, but the result is the same. The addition of a motometer to the filler cap of some cars otherwise uninteresting, has made an entire difference in the speed appearance of the design by calling more attention to the front end of the car.

Vertical lines on a car indicate stability only if the eye travels from down up, as shown in Fig. 3. One of the reasons for the charm of the pointed door or body hook just back of the hood, as used on coupe and limousine models of prominent makes, is that this accent, shown in Fig. 3 at B., draws the eye to the bottom of the door first and then allows it to travel up and back. A curve to the roof, leading up and back also adds to the speed feeling and appeal of the design. A car with a flat roof and a big ventilator or railing on top looks unstable, rather than sturdy, even though the vertical lines are made more insistent.

The sense of power in a car may be suggested in two ways: first by the proportion of hood length to the rest of the car, and second by hood height compared to body-sill height.

Body width gives the impression and fact of roominess, while height from the ground gives the suggestion of stability. Length gives the idea of ability to hold the road at speed provided the mass of the body's design is carried up front.

Many cars fall in their appeal, to a certain extent, by being too high in proportion to their width. This is sometimes due to frame necessities where a straight frame is used, and sometimes to mechanism carried too high. Cubical dimensions of the car body give one the sense of weight or lightness in relation to that car, and by their suggestion of operating expense appeal or repel. To look roomy a car must look wide in proportion to its depth.

The mass of the running gear, the heavy look of the wheels, etc., are what suggest comfort. Big wire wheels of red or white suggest luxurious riding, and hence appeal, even though they may ride no easier. In the writer's opinion, there is no doubt of their advantages from the engineering standpoint, however, as well as for handiness, and their disadvantage when it comes to washing.

A great deal of the pleasure of riding is marred often by uncomfortable seats. The appearance of luxury in cushioning is, therefore, to be sought, and high curved backs deeply tufted add to the comfort—appeal to the eye, even outside of their appeal in practice.

The final appeal to a motor car design in its exterior is obtained by color and finish and this appeal will depend largely on the former experience of the buyer.

Black brings out lines and reflections and hides shadows, white emphasizes mass and kills color. Strong colors do not show up

well in combination with white except in small spots or accents, or in striping. Black is a good color for a car of beautiful outlines. White is preferred for a car of mediocre outlines and gives a sense of largeness. This applies to tones and colors, as well, between white and black, so that there is a certain color which best fits a certain car. Manufacturing reasons, however, hinder the search for such an ideal.

Color eventually will be chosen by the buyer for utilitarian reasons, and a color that shows dust and dirt least will be preferred. This points to lighter colors, as black is hardest of all to keep clean though the easiest to put on in manufacture.

In the matter of finish a small vehicle needs more careful finish and appointments than a large in order that it may obtain its measure of road respect. A big limousine obtains its road authority through its mass. A small car must obtain this through its insistent appearance. Better finish, and trimming almost to the point of flashiness is needed in a light car. What would be bad taste and poor art on a big vehicle becomes good taste on a light car for this reason. Enameled leather upholstery and quilted dash might look out of place on a big car, but are quite the thing on small construction.

The car of the future will be designed with art lines to suggest the action of its mechanism. It will be designed to take every advantage of art knowledge to build up an appeal consistent with its mechanical performance. Speed, power, comfort, luxury, safety, and economy will be suggested by the appearance of the car, and by following art rules, as faithfully as engineering rules are followed in the shop.

truck by men of this class reverts to the purchase of transportation at so much a ton or a mile, and the ability of the machine to do economically and profitably the work in question.

When a business man buys a motor truck he should first convince himself that he is not merely buying a machine. He is buying transportation for the period represented by the useful life of the machine, and when he pays over the money to the salesman or dealer who sells him the motor truck, he is merely paying the first installment on a big transportation investment. The rest of the investment is paid every day in operating costs during the total useful life of the motor truck.

Buying Transportation

Take, for example, the service value of two trucks, both of 2 tons load-carrying capacity, but one costing approximately double the price of the other. Assuming that in a motor truck, as in most other classes of merchandise, the buyer gets what he pays for, it is fair to make the statement that the materials and workmanship entering into the construction of the higher-priced truck will be better than in the other. In this case the effect would be shown in the running costs and useful mileage life of the trucks.

If the higher priced truck averaged 60 miles a day for a total useful life of 2,000 working days, and cost \$12.50 a day to operate (including overhead, wages, running expenses and depreciation), the total transportation investment would be \$25,000. Based on the writer's experience in a fairly typical case involving the use of a large number of trucks, the cheaper machine might cost \$29,480 during the same period, or at the rate of \$672 a year more than the other, averaged over the total life of the truck; and this does not take into account the annoyances and expense of the delays due to the greater repair and maintenance problems of the cheaper machine.

It must not be assumed from this that the cheaper truck will be a losing investment. On the contrary, in most cases it will prove to be a very profitable investment as compared with animal transportation. At the present stage of motor truck development there will undoubtedly be sold more trucks of the cheaper class than there will be of the more expensive types of trucks. And the experience gained from the use of these cheaper trucks will pave the way for a more extended use and application of trucks of the better class which in the end prove to be a far more satisfactory and profitable investment.

As a matter of fact, there will be a market for the lower-priced trucks, chiefly from expediency and also, in a lesser degree, on account of the lower first cost. Many low-priced trucks that are sold to successful business men, however, may be regarded in most cases as merely experimental applications of motor transportation until the use of motor trucks shall have been proved feasible and profitable in given businesses and under stated conditions.

Big Task to Choose a Truck

The business man who has made up his mind to adopt commercial motor vehicles for the first time, is confronted with a maze of conflicting practice in engineering, body design, load-carrying capacities and prices, as well as the more or less successful and seemingly contradictory experiences of the business man in general and of those in his own line in particular.

He is certain to meet a lot of motor truck salesmen whose reasoning and arguments agree only on the advisability of using motor trucks, and differ largely on the other essentials. He will meet salesmen who will tell him the worm drive is the only thing

Problems Involved in the Choice of a Motor Truck

By Henry Farrington
Thomas B. Jeffery Co.

A MOTOR TRUCK is a transportation investment, and therefore the real problem involved in the purchase of one is reduced in its ultimate analysis to the purchase of transportation at so much a ton or a mile, whatever unit of transportation may be chosen. Of course, there are other considerations, but in the main they are usually incidental.

Some people buy motor trucks because they are necessary to open up new territory to trade, or to keep in touch with old customers who are moving away from trade centers in rapidly growing cities and towns. Others buy motor trucks because they have to meet the superior transportation competition of their trade rivals who have already adopted machine delivery. Still others use motor trucks for their advertising value, mainly as an outward and visible sign of commercial worth and prosperity.

But these and similar reasons are merely incidents in the development or transition period from the older, slower and less efficient methods of transportation to the more economical and up-to-date methods of the present day.

The country is being flooded with commercial vehicles of all types and designs. Manufacturers of the lighter and cheaper types of pleasure cars are invading the commercial motor field.

Several manufacturers of light motor wagons have already taken advantage of the present demand and are manufacturing and selling large quantities of machines designed to carry from 750 to 1,500 pounds. Several of these have been notably successful, and at least one of them has arrived at a quantity production stage which was not deemed possible a few years ago.

Another movement which is well under way is the conversion of a certain inexpen-

sive type of touring car into a so-called motor truck by the addition of an improvised rear-end assembly to the car after removing its rear wheels, using the car axle as a jack-shaft for a sort of hybrid motor truck. At least a dozen such contrivances have been placed on the market, and many thousands of these trucks have been sold, in consequence, at a price that offers considerable inducement in comparison to the cost of a regular motor truck of the same load-carrying capacity.

Other Types

Other hybrid constructions include the front-drive motor truck with a rear-end construction adapted from the horse wagon, and the six-wheeled semi-tractor-trailer device. The usual collection of freaks and oddities of all kinds is also apparent in the great motor truck expansion movement which began to gather impetus a few months ago. These various accessories to the more regular motor truck development may or may not persist, according as they are proved out in the race of the survival of the fittest. But at any rate they have the function, and a useful one at that, of popularizing the motor truck idea. They will bring home to thousands of people, who otherwise would take a long time to reach, the benefits of motor road transportation, and will have an appreciable effect in hastening the all-motor era that is rapidly approaching.

The really good business man, who is not sold on promises and who does not buy on price, will make a very careful analysis of his transportation needs before he invests money in motor trucks. It is men such as this who will lay the real foundation for continued development and success of the motor truck business by the benefits they themselves will derive from them. And in the final analysis, the purchase of a motor

Others will insist that the double-side-chain drive has never been improved upon. The internal gear drive and double reduction axle also have their champions. The men who are selling motor trucks with power applied to all four wheels will claim that the rear-drive truck is doomed and is already obsolescent. And here and there will pop up another type of final drive differing from any of the others and which will be stated in all apparent sincerity to be the last word in motor truck design.

The merits and demerits of two, four and six-cylinder motors of numerous types will receive their fair share of attention. Clutches, transmissions, differentials, brakes, wheels, tires, governors, radiators, and numerous other details of design will be freely discussed, and the various designs will be praised or condemned according to the beliefs of the contending salesmen, or their anxiety to make a sale.

Engineering Details Unessential

The truth of the matter is that these little things are absolutely unessential except insofar as they may affect the applicability of the truck to the job in question, and the profit the machine can make in comparison with other modes of transportation it is intended to displace.

There is not an automobile engineer in the business who can prove definitely that in efficiency and operating economy, any of the recognized and approved forms of final drive is appreciably better than any of the others. The best point he could make would be to show that the particular type he is advocating is more in accord with the general design of the rest of the machine than any of the others, or that it was cheaper to buy or manufacture, or weighed less, or had more ground clearance, or was easier to obtain under the present conditions, or was easier to inspect and repair, or had longer life, or was cheaper to replace, either in whole or in part, when worn out.

Some of these things can undoubtedly be proved under many conditions. Others cannot be proved at all. All of the various types have or have had their place, and every one of them is fulfilling or has fulfilled a useful function in the development of motor truck practice.

Limitations of Certain Designs

The various types of worm and double-reduction axles undoubtedly have less ground clearance than the internal gear axle or even the chain, and on the face of it, trucks using axles of these types are primarily intended for use on good roads. They are not particularly applicable for use on rough or broken roads, in mud, snow or sand, on high-crown roads, or in country where high axle clearance is necessary or desirable.

In the writer's experience considerations of this kind limit the field of application of the various types of motor trucks roughly as follows:

1. Trucks with low clearance, to good roads.
2. Rear-drive trucks with high clearance, to good and fair roads.
3. Trucks with power applied to all four wheels, to good, fair and bad roads, and steep hills, where it is comparatively easy to obtain traction on all four wheels.
4. Trucks with power applied to all four wheels and a positive drive to each wheel, to good, fair, bad and very bad roads, where traction can be had on at least one of the four wheels.

Selling the Truck to Suit the Job

Considerations of this kind bring one back to the necessity for selling a motor truck to suit the job in question. The engineering features and design of a truck do not make a great deal of difference as long as the truck will profitably and uninterruptedly do

the work in hand. If a business man is hauling goods in a territory where all the roads are good all the year around, he has an unrestrained choice of almost all the trucks that may be offered him.

The types of motor, final drive and other details are not particularly essential except as they influence the price, the profit or the perpetuation of his investment. He will be wise to check up one truck against another on each of the following points:

1. Actual developed horsepower per pound of total weight carried at given maximum speed.
2. Total weight carried per inch of tire width.
3. Proved gasoline, tire, repair and maintenance costs per mile under given conditions.
4. Accessibility of the various parts of the truck for inspection and repair.
5. The cost of repair parts.
6. The capacity of the dealer or manufacturer for supplying repair parts indefinitely and without loss of time during the probable life of the truck.
7. Workmanship and quality of materials in the units of the truck, considered in regard to the work they have to do.
8. The total weight of the truck chassis to carry a given load, including the body weight allowance.
9. The type, design and quality of the body to carry the goods in question, including the effect these have on the safe carriage of the goods and the ease and quickness of loading and unloading.
10. The commercial worth and reputation of the truck manufacturer.
11. The price of the truck.

Price Relatively Unimportant

The above items are not necessarily arranged in order of importance, except the last. Unless the amount of money available for the purchase of equipment is limited by financial considerations, the price of the truck should be the last thing to be taken into account.

The truck with power only in its rear wheels has necessarily most of its weight on the rear end, and in practice this may be anywhere from 60 to 90 per cent. The average is from 75 to 85 per cent.

In the four-wheel-drive type of truck it has been possible to distribute the load as well as the power equally to all four wheels. Although this involves more power-transmitting details, the problems of design and construction have been simplified owing to the equal distribution of weight and power.

The result is that a truck with power in all four wheels can be built as strongly and with as great load-carrying capacity as a rear-drive machine having approximately the same weight. The number of actual parts in the all-drive truck may be more, but the number of different parts should be less. This is on account of the duplication to a considerable extent of the front and rear details of the truck, an impossibility with rear-drive construction.

Proper Basis for Selling Trucks

In conclusion, a few words may be said as to the load-carrying capacities of motor trucks under given conditions.

The manufacturers, since the beginning of the industry, have sold their motor trucks on the basis of load-carrying capacity, and unfortunately the buying public has fallen into the habit of regarding a two-ton truck, for example, as a machine that will carry a load of two tons under any and all conditions, and that the load capacity has a certain definite relation to the price of the machine.

This form of reasoning is erroneous. In Chicago, Illinois, where the roads are fairly good and hills simply do not exist, a two-

horse team will haul from three and one-half to five tons day after day for an average daily mileage of anywhere from fifteen to twenty-five miles. Along the dock road in Liverpool, England, one may see Belgian horses pulling lorries carrying loads of from five to seven tons each. In the western part of the United States of America, out among the mountains where the roads are poor and grades are steep, it is not uncommon to see a six or eight horse team pulling from one to two tons, and having a hard job doing it.

In other words, the amount of load that can be hauled by a given team depends on the grades and the condition of the roads. Then why should a motor truck, rated at two tons, be always considered as a two-ton truck under all kinds of conditions?

Load Capacity Varies with Conditions

The truth of the matter is that a two-ton truck operating continuously on a level pavement in good condition may safely carry even more than its rated load capacity if the driver is careful in starting and stopping, and in accelerating or retarding the speed of the truck. The same machine operating on a road full of chuck holes may not carry more than one ton of load, and certainly should not be driven at the same rate of speed as on a smooth level pavement.

A two-ton truck with its body and a capacity load may weigh five tons, and if this machine is running at a speed of fourteen miles an hour it is certainly going to be injured in the long run if it is bounced into and out of chuck holes and over obstacles on a poor road.

These considerations lead one to wish that the method of rating a truck by load capacity be abolished in favor of a system of applying each motor truck to the particular job it is called upon to perform. In this case, not only would the road clearance, weight and power of the truck, and the body equipment be taken into consideration, but the load-carrying capacity, the gear ratio, and consequently the speed would be chosen according to the conditions under which it is intended to be operated.

OVERLAND STOCK QUARTERED

Toledo, O., June 5—Sanction has just been secured from the state of Ohio and the New York stock exchange to reduce the par value of each share of common capital stock of the Willys-Overland Co. from \$100 to \$25 a share. This change has been made in order to create a wider market and more general distribution of stock.

ELECTRIC TAXIS FOR CHICAGO

Chicago, June 2—Guy Woods, owner of the American Motor Livery Co., has recently placed an order with the Milburn Wagon Co. for twelve specially-built electric town cars. These cars are to be delivered November 1 and will be ready for service at once in Chicago. The new electric cab will be of the limousine type and will accommodate five passengers. The initial order of twelve cabs will without doubt be increased later by another order of twenty-five or thirty more, making a fleet of possibly forty.

Electric taxicabs have for some time past operated in Detroit with phenomenal success. The Detroit Taxicab & Transfer Co. now operates a fleet of 75 electric cabs which have proven to be the most popular taxicabs in this company's service.

France Prohibits Car and Body Imports

Believes Shipping Facilities Are Needed for Articles of Greater Importance

PARIS, May 20—On the ground that shipping was required for articles of greater national importance, the French government has prohibited the importation of motor car bodies and chassis. Other articles barred in the same decree comprise such luxuries as pictures, photographs, jewelry, cameras, etc. Within 48 hours of the law being passed, the decree had been signed putting prohibition into force. This rapid action came as a surprise to some dealers who were ill prepared for it.

It was obvious, however, after England's action in imposing first a 33½ per cent duty, then prohibition, that France would not be long in following suit. Careful observers were aware, too, that the French motor industry was doing its best to influence the government towards prohibition of imports.

All the agents affected are handling American cars, the makes of cars being Ford, Overland, Buick, Dodge, Maxwell, Chevrolet and Saxon. These were the only ones doing active business in France. Generally sufficient stocks are held to keep business going for a couple of months. After that the agencies may as well close, for they will have nothing more to sell. Although the law is in force, an attempt is being made by dealers to get it repealed. It is pointed out that the demand for cars comes from persons who need cars in their business.

American Cars Replace French

This is shown by the fact that as soon as French cars are requisitioned by the military American cars are bought in place of them. These purchases would not be made at the present time if the cars were not really necessary. By shutting out American cars at a time when the home factories are unable to supply, dealers will be ruined and their business connections lost. Thus the French manufacturers are doing themselves harm, for they are destroying businesses which are essential to their prosperity in normal times.

It is very doubtful if the protest against prohibition will produce any immediate result. The influential leading manufacturers are enraged at the possibility of America getting hold of the French market, and will bring very strong pressure to bear against any attempt at repeal. It is obvious too that when this protective measure becomes unnecessary at the end of the war they will not be satisfied to return to their old tariff rate, but will ask for a substantial increase.

Much of the opposition is directed against Ford; yet it is significant that Ford is now building a big factory in

England and in the future will supply the continental market from that source. Thus any preferential tariff among the allied powers will necessarily admit Ford into the French market on the same terms as cars of entirely English origin. Some members of the industry are inclined to

Left His Regular Profession for a Sideline

Bostonian's Plan for Getting Prospective Car Buyers Nipped

BOSTON, Mass., June 3—C. S. Henshaw, dealer for Dodge cars in eastern Massachusetts, has uncovered a new method for securing prospective customers for motor cars, and then using the names to get commissions from other dealers. A man, who runs an employment bureau in Boston put an advertisement in one of the Sunday papers reading as follows:

1915 DODGE

Touring car; lady drove this car and had a slight accident, denting the front mudguard. She has now lost confidence to drive and will dispose of car this week for \$400 or best cash offer. The motor is in perfect mechanical condition. R. 41.

As Mr. Henshaw could get about \$600 for such a car, and would offer the owner at least \$500 he knew the advertisement was "queer." Also an owner would generally go to his service station to have the car repaired. So he decided to do some detective work after notifying the newspaper. Through some friends in big business houses down town letters were sent to the box number requesting information about the car. And the advertiser did not realize he was being trapped. He answered a couple of the letters, and then it was learned that he never owned a motor car, and did not know any lady who had such a car.

The man was asked to call and see Mr. Henshaw and he did. When he was shown a copy of the Massachusetts law that sends any one to prison for advertising fraudulently he wilted and confessed the whole scheme. By getting names of prospective purchasers the man hoped to peddle the names and split commissions with salesmen. When the newspapers was told the facts it placed the man's name on its dead list and he cannot insert any more advertisements of any kind. Mr. Henshaw has not decided whether or not to prosecute the man.

look upon the Ford as a missionary car which will extend the motoring movement.

At the present time spare parts are not included in the list of prohibited imports. This is probably an oversight, and spares may be expected to figure on subsequent lists. Unlike England, France has not differentiated between touring cars and trucks; thus commercial vehicles are shut out. The only important firm to be affected by this is Gaston, Williams & Wigmore, who hold the agency for Peerless, Selden, Paekard, Locomobile and Willys-Garford.

CO-OPERATIVE ROAD BUILDING

St. Joseph, Mo., June 2—St. Joseph has a novel idea on building its own community and helping all its neighbors to build, too.

This city and Buchanan county are offering to help any district in adjoining counties—in nearby states even—who want to build roads that connect with St. Joseph or Buchanan county highways.

Good roads activities heretofore have centered in the Automobile Club of St. Joseph, though the Commerce Club and other organizations have materially assisted. Recently, however, a new organization was formed, which has the task of improving highways. This is the St. Joseph and Buchanan County Good Roads Association. At the head of it as president is George E. McIninch, and its secretary is L. S. Stubbs—both holding similar offices in the Automobile Club.

This good roads association is not merely trying to arouse some public interest in good roads. That interest already exists in Buchanan county. But it is taking the advanced steps that are possible after a community has shown its willingness to pay for roads.

WAREHOUSE PLAN HELPS DEALERS

Wichita, Kansas, June 2—This city has one of the most unique motor car storehouses in the country. The United Warehouse Co. is the originator and operator of a scheme to enable dealers to get cars into the city ahead of their demand so that they can make prompt deliveries almost as soon as a sale is consummated. It is now estimated that there are \$1,300,000 worth of new cars in the five-story warehouse, valuing the cars at \$1,000 each, which is small enough considering that Ford storage is not included.

The building has 100,000 feet of floor space and its capacity is so taxed that the cars are being double-decked. At the docks of this warehouse have been received since the first of January 481 carloads of automobiles or nearly 3,000 motor cars. Prior to the adoption of this system by the motor car dealers they were obliged to get their supply by carload lots and the result was that they were out of cars about half the time.

With the present method a dealer may order ten carloads if he wishes with a

payment of one-third cash. The shipment is sent to the United Warehouse Co., which pays the balance and puts the consignment in storage. It is only necessary for the dealer to remit the balance of the purchase price of each car to the warehouse to release it, of course paying a nominal figure for storage.

FORMING MOTOR RIFLE CORPS

Washington, D. C., June 3—Jay Hall, associate executive of the Olds Motor Works, of Lansing, Mich., and advocate of national motor military preparedness, has been invited by Fred H. Phillips, secretary of the National Rifle Association of America, an adjunct of the United States War Department, to co-operate in the formation of civilian motor rifle clubs throughout the United States.

The war department's national board for the promotion of rifle practice, acting through the National Rifle Association, has been fostering the formation of civilian rifle clubs for some time. Government equipment, consisting of standard army rifles and ammunition has been furnished to this end.

To date 1,200 clubs have been organ-

Harvard Regiment Moved by Motors

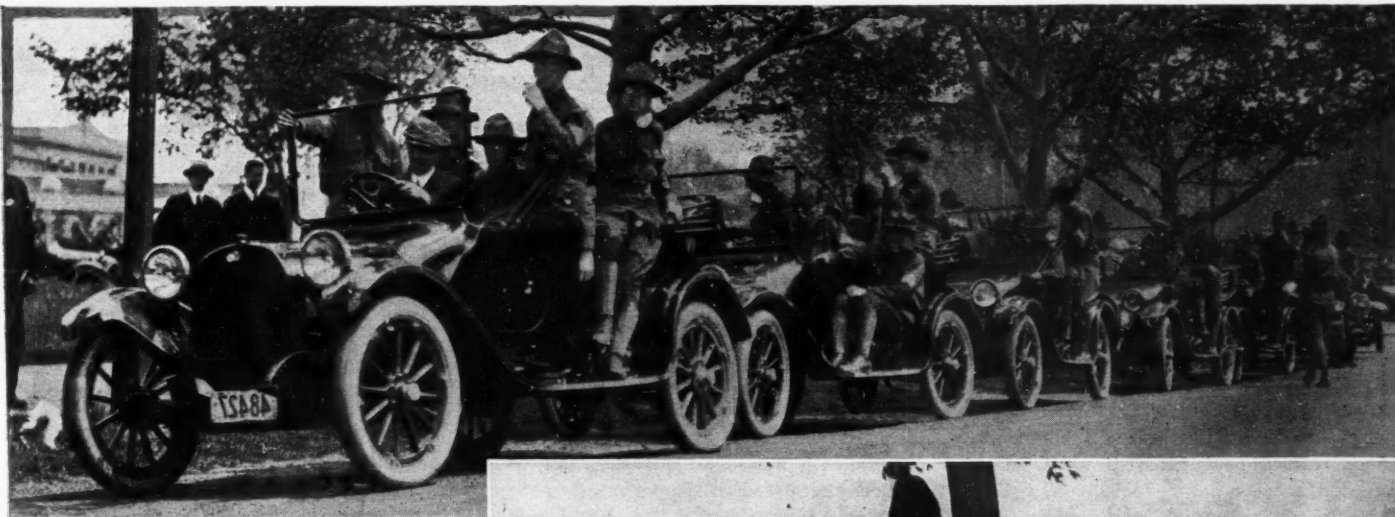
Dodge Dealer Furnishes Cars for College Men in Preparedness Parade

BOSTON, Mass., June 3—One of the big factors in making the preparedness parade at Boston a success, in which some 50,000 men and women marched, was the transportation of the famous Harvard Regiment of 1,000 students to and from the parade route. The parade and the intercollegiate meet, the latter bringing all the greatest athletes from the big colleges of the country to Cambridge, took place on the same afternoon. The Harvard students, who have formed a regiment, and have full equipment of uniforms and guns, were to be a feature of the parade. They were also expected to be on hand to cheer for their fellow Harvard athletes. So the parade officials gave them a leading place in the line, but as the parade started at 1 o'clock and it took more than an hour to go over the route, the problem was to get back in time to Cambridge to see the games.

C. S. Henshaw, Dodge Bros. dealers, solved the problem when he heard of it by offering to transport the regiment in cars of that make. He got together more than 100 machines which went to Cambridge and drove the student soldiers to the starting line, then went to the finish and picked them up again and landed them at the athletic games in time to see about all of them.

N. A. C. C. PREPAREDNESS AIDES

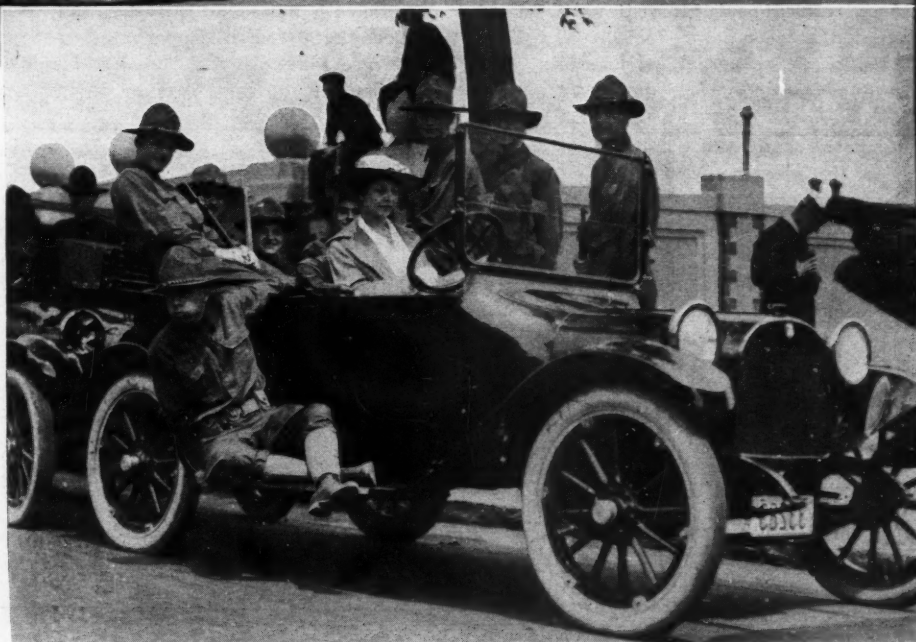
New York, June 6—A committee made up of S. D. Waldon, Cadillac Motor Car Co.; H. H. Rice, Waverly company, and Alfred Reids, general manager of the National Automobile Chamber of Commerce, has been appointed to co-operate with the Society of Automobile Engineers on a plan for the mobilization of trucks. The committee will represent the chamber in industrial preparedness work.



Above is a part of the 1,000 Harvard students in parade and at right Miss L. C. Crawford, one of the woman drivers

ized. Phillips states, however, that a serious difficulty in the road of further progress lies in the relative inaccessibility of rifle ranges to centers of population.

In its eventual outcome the enterprise promises to be of benefit to the preparedness of this country in two ways: First, it will provide for a large number of trained rifle men who can be converted into infantrymen on short notice; and second, it will place at the disposal of the war department a large number of privately owned cars to act in conjunction with the United States army. The accomplishment of either of these objects, state military experts say, would do much toward establishing the United States on a basis of preparedness.





Peach Bloom Spring, the little garden spot that furnishes the water for the mine

Motor Takes Terrors from Death Valley

This Dread Spot in Eastern California Can Be Visited by Machine Without Danger of Accident

By Edna Covert Plummer

A MOST unusual trip, and one that was greatly to be feared before motor cars made such a joke of distance, is the 120 miles covered by the famed Death Valley of eastern California. This part of Inyon county lies between the Funeral Mountains on the east and the Panamint range on the west, and has proven for decades a most fascinating but dangerous, and oftentimes fatal, spot, as the many unknown dead have mutely testified. The valley was a trail of gruesome relics unsurpassed by the tourist-haunted catacombs of Paris and of Rome.

Lack of water and the burning heat have caused many an outfit to succumb and leave the bones of both man and beast to bleach in the every-ready sun. One man, named Dayton, started out with a six-mule team, and shortly afterwards his body was buried in the desert and the skulls and bones of his faithful animals were placed upon the grave—a most ghastly array.

Now the motor car has robbed Death Valley of its terrors, and tourists, miners and gas-

oline prospectors can be found within its confines. The hard, glistening roads seem to make the motorist wonder why the former terror. The State Mining Bureau of California now is equipping and sending out parties of mining engineers and experts to explore the valley for minerals. The high prices of most minerals have made them determined that this region also shall yield its riches. Gold and antimony and lead already are being mined there and it is probable that the new research work will result in increased development of that part of the county.

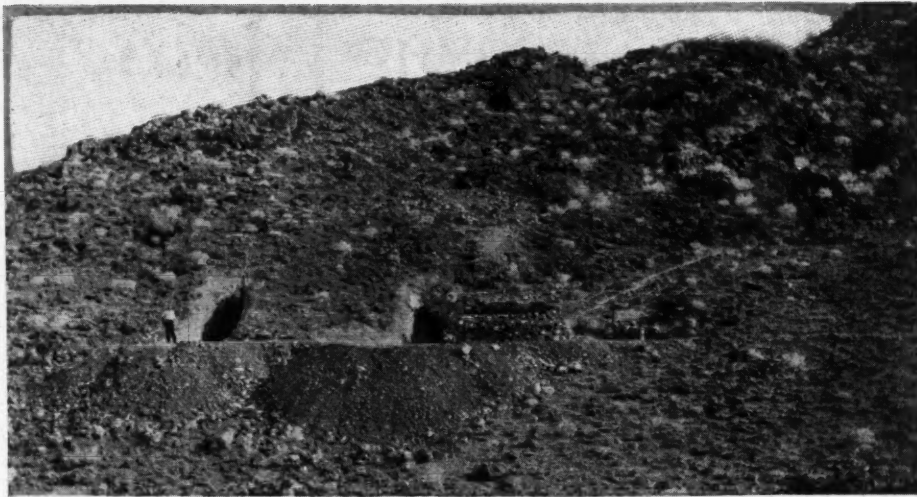
But it is not all sand, for in some places the gleaming desert gives way to vegetation, and as far as the eye can reach is the sage brush and mesquite trees. Entering the valley from the south, if one will take the time to turn to the left, he will find at the base of the Panamint range a carbonate lead mine, and the water for the mine is furnished from a beautiful little spring called "Peach Bloom Spring." Here are bearing orchards of figs, peaches and grapes—a most beautiful oasis in the hot desert of sand.

However, the tourist who is annihilating distance and danger by his speedy car must have a care or he will meet the

fate of the earlier adventurers. Water must be carried and lots of it. Here where the heat is so intense that the miners work at night and sleep—or try to—in the daytime, both machine and inmates will need frequent deep draughts from the desert water bag. It would be advisable to carry as much water, and gasoline as well, as you can possibly find a place for in or on the car. A lover of scenery



Dayton's grave with the skulls of his mules that perished with him



Carbonate lead mine at the base of the Panamint Range

will not want to rush through, but will take time to observe the ever-varying hues of the mountains and sands, the mirages of the deserts which are frequent here, and monuments by the roadside that may or

may not mean anything. And one thing is certain, that the hot rays of the sun will boil the water and cause it to evaporate whether you are working the machine or standing still.

Answers to Inquiries for Road Data

Inquiries About Chinati Lake

SAN ANGELO, Tex.—Editor Motor Age—I in the April 20 issue of Motor Age I see an article by W. D. Hornaday in which he states "in the Chinati mountains at an elevation of 7,000 feet is a large lake of pure crystal water teeming with fish."

I would like to know if it can be reached with a car. What are the conditions of the roads? How large is the lake, also what kind of fish are there? Kindly give full directions for reaching it and the nearest railroad point.—F. E. Allen.

The lake in the Chinati mountains, in the upper border region of Texas, of which you inquire cannot be reached by motor car. There is a fairly good road, however, from Marfa, on the Southern Pacific, to the foot of the mountains. The lake is not large—only a few acres in area, and I am told that it is filled with trout, which I suppose are of the mountain variety. Just now that particular section is the scene of military operations, as it was not a great way from there that the towns of Boquillas and Glen Springs, which were recently raided are located.

Milwaukee, Wis.-Houghton, Mich.

Ferrysburg, Mich.—Editor Motor Age—Kindly give a route from Milwaukee, Wis., to Houghton, Mich., mapping out the good night stops. Returning, could I find any road from Houghton to Mackinac City, Mich., then via the West Michigan Pike to Ferrysburg?—J. H. Johnson.

In going from Milwaukee, Wis., to Houghton, Mich., we advise your going north through Thiensville, Saukville, Waldo, Plymouth, Kiel, Hayton, Hilbert Junction, Forest Junction, Greenleaf, Green Bay, Brookside, Oconto, Peshtigo, Marinette, Menominee, Stephenson, Talbot, Carney, Spalding, Cedar, Vulcan, Norway, Iron Mountain, Sagola, Flood Wood, Republic, Humboldt, Champion, Three Lakes, L'Anse, Keweenaw Bay, Chas-sell, to Houghton.

You will find a good night's stop at Green Bay, Menominee, Iron Mountain.

In going over to Mackinac City you can retrace your route to Humboldt, then go over to Marquette, then come down to Winters and Rapid River. From Rapid River you can

get to Manistique, but from Manistique to Mackinac City they are building the road at the present time and we do not advise travel over it until the end of 1917. However, you can take a boat from here to Mackinac City if you wish.

Volume 4 of the Automobile Blue Book will give you a complete routing for this trip.

Cleveland, O.-Florala, Ala.

Lakewood, Fla.—Editor Motor Age—I am contemplating taking a trip from Cleveland, O., to Florala, Ala., on the Alabama-Florida state line via Maysville, Ky., and would like to have the best route, and if possible get a map covering the trip.—Earle Rodwell.

In going from Cleveland, O., to Florala, Ala., via Maysville, Ky., we advise your going through Elyria, Norwalk, Bellevue, Bucyrus, Marion, Prospect, Warrensburg, Dublin, Columbus, Washington Courthouse, Hillsboro, Winchester, Maysville, Blue Lick Springs, Oakland Mills, Millersburg, Paris, Lexington, Harrodsburg, Perryville, Springfield, Bardstown, New Haven, Buffalo, Cave City, Springfield, Nashville, Decatur, Birmingham, Montgomery, Luverne, Andalusia, then to Florala.

Volumes 4 and 6 of the Automobile Blue Book will give you the routing for your trip.



As far as eye can see is the sage brush and mesquite trees

If you wish any further information on this we advise you write us.

Denver, Colo.-Waco, Tex.

Waco, Tex.—Editor Motor Age—I am anticipating an overland trip to Denver and would thank you to give me any information possible as regards the route from Waco, Tex.—J. M. King.

In going to Denver, Colo., the best way for you to go is up through Ft. Worth, Wichita Falls, Childress, Amarillo, Clayton, Raton, Trinidad, Walsenburg, Pueblo, Colorado Springs, to Denver. This is a dirt road to Pueblo, but it is in a pretty good condition. In dry weather you could make a nice trip over it. From Pueblo to Denver you have numerous stretches of crushed rock and gravel roads, therefore you should encounter no difficulty at all on your trip.

Volume 5 of the Automobile Blue Book will give you a complete routing.

Quincy, Ill.-North Manchester, Ind.

Quincy, Ill.—Editor Motor Age—Kindly give the best route from Quincy, Ill., to North Manchester, Ind., giving the principal towns through which one would pass.—R. H. Reed.

In going to North Manchester, Ind., the best way for you to go is to go through Camp Point, Mt. Sterling, Rushville, Beardstown, Virginia, Ashland, Springfield, Mechanicsburg, Decatur, Atwood, Newman, Chrisman, Rockville, Danville, Indianapolis, Noblesville, Elwood, Swayzee, Wabash, Urbana, to North Manchester.

Volume 4 of the Automobile Blue Book will give you complete routing for this trip.

Jamestown, N. D.-Sioux Falls, S. D.

Maddock, N. D.—Editor Motor Age—Kindly give the best route from Jamestown, N. D., to Sioux Falls, S. D.—Odin Cleveland.

The best way for you to go from Jamestown, N. D., to Sioux Falls, S. D., is to go east through Valley City, Buffalo, Casselton, to Fargo, then turn south through Hickson, Christine, Abercrombie, Wahpeton, White Rock, Dumont, Clinton, Ortonville, Milbank, Altamont, Clear Lake, Brookings, Dell Rapids, to Sioux Falls.

Volume 5 of the Automobile Blue Book will give you a complete routing for this trip.

New Orleans-Chicago

New Orleans, La.—Editor Motor Age—Kindly give the best route between New Orleans and Chicago, also send maps showing same.—F. A. Colburn.

In going from New Orleans to Chicago the best way for you to go is to go through Gulfport, Biloxi, Mobile, Thomasville, Safford, Selma, Montgomery, Birmingham, Decatur, Nashville, Springfield, Cave City, Elizabethtown, Louisville, Salem, Seymour, Columbus, Indianapolis, Frankfort, LaFayette, Wolcott, Rensselaer, Thayer, Highlands, to Chicago.

Volumes 6 and 4 of the Automobile Blue Book will give routing for your trip.



The Readers' Clearing House

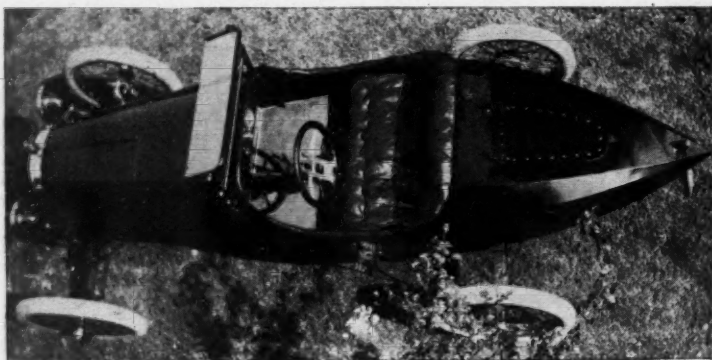


Fig. 1—Top view of redesigned Ford

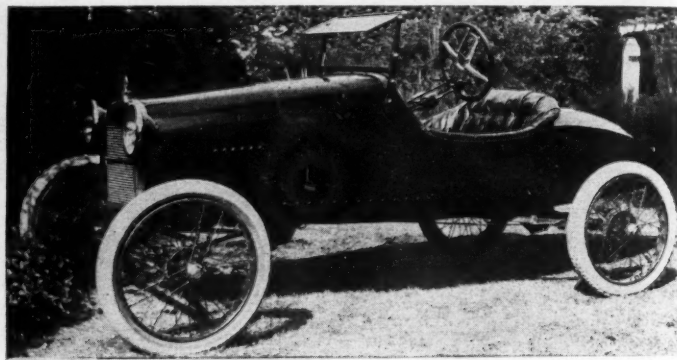


Fig. 2—Side view of same car shown in Fig. 1

A COMBINATION BODY FOR FORDS Design Makes Provisions for Comfortable Sleeping Quarters

SPOKANE, Wash.—Editor Motor Age—I am sending you two views of a special four-passenger Ford construction, the distinctive features comprising a disappearing top, front seats divided and removable, rear seat adjustable up and down, forward and back, which can be removed and used as a bed on the floor. The sleeping berth, made up, is 92 inches in length, 35 inches wide. The car is underslung.

The writer has ridden in almost every make of car, but has yet to see one that will hold the road as does this one. The floor is 7 inches lower than that of the standard Ford. It is constructed of new Ford parts using standard springs. The top may be raised or lowered while the car is in motion. In appearance it is very attractive and draws the crowds wherever it stops. The road clearance is 9 inches loaded.—G. C. Jackman.

Note—A view of this car is shown in Fig. 3.

AIR AND WATER COOLING ECONOMY Recent Statement of War Correspondent, in Article, Questioned

Huntington, L. I.—Editor Motor Age—In Motor Age of May 4, replying to Oklahoma City, it is stated that water-cooled engines have demonstrated their advantage over the air-cooled, as the air-cooled use more oil and gasoline, necessarily using heavier tanks. How about the weight of the radiator, pump, operating mechanism, etc.? Then why should an air-cooled aviation motor use more gasoline than a motor car motor, which in economy of fuel is as about 3 to 5 in favor of the air-cooled, and very little more oil is used? Oil, however, is a small factor of weight.

The Franklin car has for years held the gasoline economy record of the world and is invariably barred from entering economy contests, either directly or indirectly—even when oil and gasoline consumption are figured.

I think the real reason that water-cooled motors are used in aeroplanes is because there are more successful designers of water-cooled motors abroad, and I am not aware of any air-cooled motor cars manufactured abroad of any importance.—C. Barclay Ward.

It is impossible at this distance from the European battle front to give any definite information on this subject. The

report was made by Motor Age's special correspondent who is closely in touch with aviation and motor car development in the army. It is quite probable that your suggestion of the reason is correct.

HE FAVORS MECHANICAL SIGNAL Would Have Standard Type of Traffic Indicator Adopted

St. Louis, Mo.—Editor Motor Age—The article in the May 18 issue on the subject of traffic signals for motor cars was read with considerable interest, because of the difficulties one experiences nowadays in driving a car in the city, especially in the congested districts during the rush hours and also at night time in the residence sections and parks.

The present method of hand signalling is so crude and unsatisfactory in most instances that one is kept continually guessing just what the car ahead of you is going to do, thereby often causing an unnecessary shifting of gears, etc., waiting to see whether it will turn to the right or left, stop, or continue straight ahead. At night time it is even worse, as hand signals cannot be seen at all, which makes it impossible to signal the traffic officer or the car behind. I, for one, would welcome the general adoption of a practical motor car traffic signal that will indicate from both the front and rear of a car every movement that the car can make. For example, whether the car will go straight ahead, stop, back, or turn right or left. I would be glad to install such a signal on my car, if I knew it would be recognized by the police, traffic officials and casualty insurance companies as legal signals.

I believe the Safety First Federation could render a valuable service to motorists and the general public, if they would go further in their recommendations and would draft and adopt a uniform set of signals that would plainly and clearly indicate both day and night to traffic officers, motorists and pedestrians, especially to

children, in the simplest language possible, every move that the car makes, so there can be no possible misunderstanding or argument as to just what each signal means.

Then amend the present traffic ordinances governing hand signals so they will permit the use of any signal device that complies with all the requirements specified in the amended ordinances as drafted by the Safety First Federation. This action would assure the use of standard signals carrying their official approval and assure recognition by police officials and insurance companies as legal. The car owner would then have the option of using any approved signal device, or continue to signal by hand; however, most of us wish we had a signal device, especially in rainy or cold weather, when the curtains are up, or the car is a closed one and it is impossible to put the hand out.—Charles P. Taylor.

DEGREE OF HEAT ON CASINGS Friction Heat Will Not Reach Melting Point of Rubber

Chicago—Editor Motor Age—About what temperature does a tire reach under ordinary running conditions?

2—Would this heat be sufficient to vulcanize raw rubber?

3—Does a tire ever attain this high a temperature, and under what conditions?

4—Is it absolutely essential to apply heat in vulcanizing? If so, upon what theory are the so-called "cold vulcanizing process" based? —J. W. Hughes.

1—This is entirely dependent on the speed that is made, how long this speed is maintained and the heat of the surface upon which the tire is being driven.

2 and 3—No. Such a heat could not be obtained from friction created in driving.

4—No. The cold vulcanization process is the application of a pasty compound into the cut in a tire, this compound wedging into the pores of the tire rubber by the frictional heat created when driving.

Explosion Temperature

Huron, S. D.—Editor Motor Age—Some time ago in the discussion of the advancement in automobile engineering Motor Age mentioned the gas turbine. Could Motor Age give a description of the engine in the paper?

2—What is the temperature in the ordinary gas engine at the time of the explosion?—A Subscriber.

1—A number of experimental designs have appeared, but none have proven practical.

2—The heat of explosion varies from 2,000 to 3,000 degrees Fahrenheit, depending upon the temperature of the atmosphere, design conditions, etc.

LOUD HUM IN THE DIFFERENTIAL Gears Are Undoubtedly Improperly Meshed—An Examination Should Be Made

Hastings, Neb.—Editor Motor Age—I have a 1913 Everitt 30 which has a loud hum in the differential and at times there seems to be a sort of grinding noise there. It does not seem to effect the running qualities of the car, but I would like to eliminate it if I could.

2—What causes this and would ground cork put in the rear end with the grease help it any?

3—Would it injure the differential gears in any way?

4—If cork will not help it, does Motor Age know of anything that will help?—R. T. Davis.

1—We would suggest that you examine the gears very carefully with a view of finding some of the teeth chipped or possibly broken completely off. Such a condition should not be allowed to exist for any period of time because the gears may be in such a condition that another 10 miles will ruin them unless they are taken care of. If the gear teeth are in good condition, the gears themselves are not meshed properly. It is possible that a new pinion gear and bevel ring gear are needed.

2—We do not advise the use of ground cork, although it has been used extensively without doing any particular damage.

3—Probably not the gear, but it can cause damage if it works into ball or roller bearings.

4—Proper adjustment.

SPECIAL BODY OF CLEVER DESIGN Reader Submits Pictures of Amateur Job for Ford

Mayesville, S. C.—Editor Motor Age—I beg to submit to the Readers' Clearing House cuts showing a home-made car that I built on the chassis of a Ford. This is my idea of cutting down one of the good old vintage of 1910's and putting it in a

class with the expensive sporting cars, with just the addition of a few repair parts, a few well selected accessories, a few sheets of 20 gauge steel and quite a lot of work.

The car has center control, walnut dash on which is mounted the speedometer, primer and dash light. On the steering column under the wheel is mounted a walnut switchboard with two carburetor controls, four electric light buttons and a Genemotor electric starter control. The body sets low, is removable and rides exceptionally easy. The angle steel frame makes this body very rigid. The car is fitted with Genemotor starter, National radiator, universal wire wheels, Neville steering wheel, Jones speedometer, motometer, Paige windshield, Hartford shock-absorbers, Klaxon horn, Hall lamps and Lynite aluminum pistons. This car was built by myself without machine shop or special tools.—H. C. Bland.

Note—Views of the car above described are shown in Figs. 1 and 2.

Transparent Wheel Covers

Newark, N. J.—Editor Motor Age—Kindly give me the name of a manufacturer making transparent disks to cover wire wheels. I believe these disks are made of celluloid or some similar material.

My car is equipped with 35 by 4½ Houk wire wheels and they are very hard to keep clean.—J. E. Scharling.

1—Motor Age does not believe that such an equipment is on the market. If you have seen such a device it was probably a novel idea of some car owner who cut the discs out of sheet celluloid.

Castor Oil for Air-Cooled Motor

Arcanum, O.—Editor Motor Age—Is castor oil suitable for a high-speed, high-compression, air-cooled motor?—Robert K. Smith.

1—Castor oil is a very satisfactory lubricant, but not enough superior to ordinary lubricating oil to pay for the great addi-

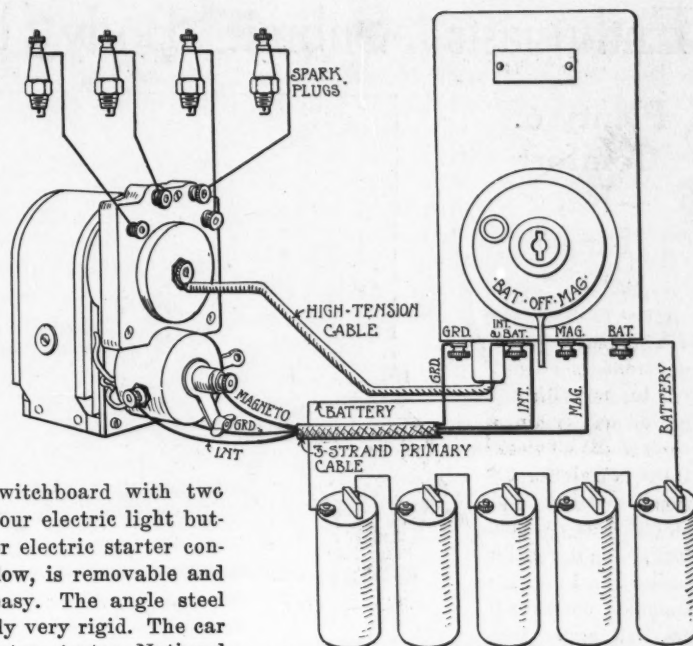


Fig. 4—Wiring diagram of magneto used on 1910 E-M-F

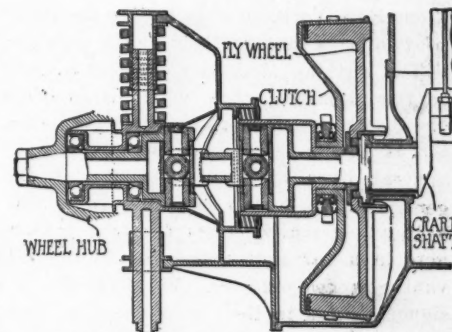


Fig. 5—Christie front drive mechanism

tional cost. The fumes of burning castor oil are very disagreeable.

To Remove Inter-State Clutch

Cabetha, Kan.—Editor Motor Age—How may the clutch be removed from a model T Inter-State car without removing the engine?—Walter Ralston.

Remove the clutch release yoke and release equipment; disassemble universal joint; take out the four bolts in the collar of the clutch spider and slip the clutch off of its spindle.

E-M-F Wiring Diagram

Marion, O.—Editor Motor Age—Kindly publish a wiring diagram showing the ignition system of the 1910 E-M-F.—D. K. W.

1—A wiring diagram of the Michigan magneto equipment is shown in Fig. 4.

BORE AND STROKE OF MOTOR

Longmont, Colo.—Editor Motor Age—Kindly give a diagram of how the clutch and the gear-set are arranged on Oldfield's front drive Christie.

2—What is the bore and stroke and the maximum r.p.m. of the Chevrolet? Of the Buick Baby Six? Of the Pierce-Arrow, model 66? Of the Chandler Six?—W. McD.

1—Shown in Fig. 5.

2—The following table gives this data:

	Maximum		
	Bore	Stroke	r.p.m.
Chevrolet 4-90.....	3½	4	1,800
Buick 4-45.....	3¼	4½	2,000
Pierce-Arrow 66....	5	7	2,200
Chandler	3¾	5	2,400

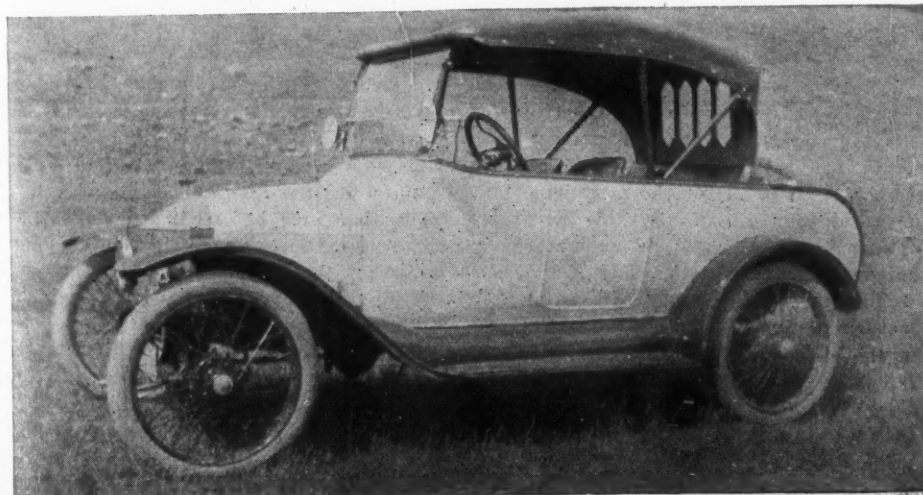


Fig. 3—A combination body for Fords

Enthusiasts Submit Body Designs of Striking Similarity

Plenty of
Comfort
—Racy
Lines

AS a peculiar coincidence, two of our readers submitted to us within a period of a week, their individual notions of how the ideal sporting type motor car should look, and, after examining the sketches, most readers will agree that they appear to illustrate two models from the same factory. One suggestion and sketch comes from Chicago and the other from New York, so it is hardly the result of two bugs getting their heads together.

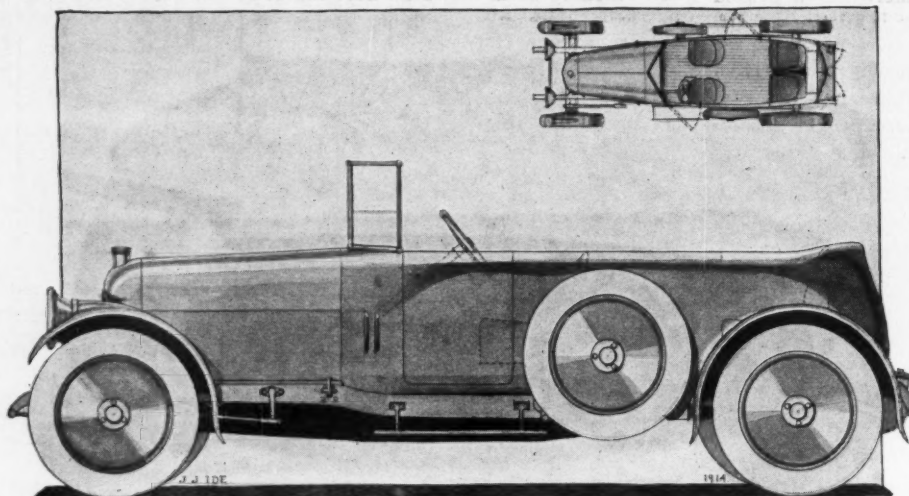
The striking similarity is most evident in the radiator design, which is so often the distinctive feature in different makes, but is also more or less noticeable in the general lines and arrangements of the bodies. Both models are designed to provide ample seating room for four passengers in a car that will have all the advantages of a roadster. We print the designer's ideas in their own words so that you may better understand just why they favor the designs they have prepared.

From New York

New York—Editor Motor Age—The drawing herewith represents the writer's ideal of a sporting type owner-driven touring car. For a machine to come under this heading it should carry no more than four passengers—but those four in perfect comfort. The statement as to limitation of passengers may be questioned, but a moment's reflection will convince one of its truth. In order to obtain a shape even remotely streamline, the widest part of the car should be well forward. The ordinary five-passenger car with its wide rear seat is thus at once ruled out. Nor can a six-passenger body on a chassis of normal length come under this heading, as there is not enough leg room if the seats are kept low.

If an occasional fifth passenger must be carried he should sit across the car, and his seat should fold against the left side of the rear compartment.

One of the greatest handicaps under which the modern body designer labors is the enormous clearance frequently required between the rear tires and fenders. The builder of one of the best American cars insists that this dimension shall not be less than 14 inches. This is an extreme case, due to the great flexibility of the



This idea emanates from a Chicago reader

rear springs, but clearances as much as 10 inches are common. In the ideal design the fenders should be fastened not to the frame but to the axles. In this position they follow the movement of the wheels and can be as close to the tires as the fitting of chains permits. In the past, mudguards have occasionally been mounted in this manner, but have not always given satisfaction owing to poor design of the supporting irons.

Lights in Front of Fenders

The sidelights are placed on the front mudguards, where they fulfill their true purpose—to indicate the extreme width of the car. This position of the sidelights has been made compulsory in England and it would be well if it were adopted in America. The wisdom of placing lights on mudguards attached to the axle is certainly debatable, but filaments should now be made strong enough to endure the shocks to which they would be subjected.

Detachable disk wheels of pressed steel are used. The chief advantage of this type is the ease of cleaning, the operation being performed in a small fraction of the time consumed in cleaning a wire or even an artillery wheel. While the steel disk wheels are slightly coned, they do not have the great projection of triple-spoke wheels.

The two doors are offset. The one on left side is for the owner-driver and that on the right for the passengers. The mounting of the spare wheels in relation to the doors is one of the most important features of the car. By this novel arrangement, which will be understood by referring to the plan, good distribution of weight is secured without blocking the motor—too often the case when a wheel is placed on each side of the hood.

The body sides are very high—29 inches from the frame to the top rail. This is rendered possible with an almost horizontal hood line by dropping the frame at the dash. The combination of a low radiator and a steeply tapered hood is

Both Favor
Divided
Front
Seats

enough to ruin the appearance of any car. This fact has been recognized by one maker who has brought out a mid-season model correcting the defect.

It will be observed that the windshield is pointed. Vision is not interfered with, as

the junction of the two glasses occurs in the center of the dash. Each front seat occupant can adjust his section to suit himself, a feature not to be overlooked during stormy weather. From the artistic standpoint the windshield harmonizes with the pointed radiator.

The four individual seats are of the so-called Pullman type introduced by Lamplugh of Paris. They are isolated from the sides and back of the body framework and can be adjusted not only fore and aft but also as to angle of inclination. It is needless to dwell upon the great increase in comfort, especially for the driver, possible with this system.

The top when not in use folds down into a permanent case. Thus is removed, perhaps, the greatest disfigurement of the modern car. Nothing surely is more ugly than the ordinary folded top in its baggy cover. The only good that can be said of it is that it acts as a more or less efficient dust shield.

A compartment is provided behind the rear seats accompanying a large trunk, the lines of the body at the rear not being spoiled by luggage piled up on a rack.—John Jay Ide.

From Chicago

Chicago—Editor Motor Age—Since body improvements and refinements, especially in the open types, are receiving universal attention among manufacturers of all grades of cars and are being advertised more than ever before, it is an opportune time to put forth suggestions in reference to these long-needed improvements and attempt to offer ideas showing the almost unlimited possibilities of advancement in this end of the industry.

The makers have devoted much time in working out large roomy bodies on comparatively short wheelbases, there appearing to be a demand for smaller bodies, especially of the four-passenger type, enabling the occupants to enjoy one an-

other's company more socially without a decrease in riding comfort.

To fill this demand there has appeared a new design—one that is distinctly different from anything heretofore offered—the three- or four-passenger roadster, a supreme effort to put comfort and sociability into a space usually occupied by two people. There is no doubt that for real comfort and companionship in motoring the roadster is in a class by itself, and in order to get it out of this exclusiveness the three or four-passenger roadster was the necessary remedy. There probably was never a design so popular as the phaeton, constructed on real phaeton lines, with the rear seat well forward of the rear axle, giving it a sporty fast appearance, a feature not noticeable in most body designs. But the four-passenger roadster is a roadster and phaeton combined to form a new design entirely new and original, without any frills or freakish lines.

The writer has always been an advocate of the genuine streamline body and he thinks that there is no design in which this idea can be better expressed than in the one here illustrated. As usual, the manufacturers have executed this new design half-heartedly, two fore doors and a pinched-up enclosure behind the front seat serving as the seat for the third or fourth persons.

Body Long and Low

The purpose of this article is to show by the accompanying illustration that a luxurious and comfortable car of this design is possible, not freakish nor radical in design and that it could be easily executed by any of the old-established companies which are now offering designs and color schemes suited to the individual tastes of their customers.

The body is mounted on a long low-hung chassis of rather heavy construction, built to hug the ground, yet with the usual road clearance, a feature belonging strictly to the roadster design. The radiator is of the large rounded type, with a large water cap and mounted several inches back of the front axle.

It will be noticed that placing the radiator behind the front axle and placing the rear seat in front of the rear axle adds to the appearance of the car as well as adding to its riding comfort, since all the weight is actually carried between the axles. The bonnet rises gradually in a straight line, continuing with the cowl of the body to the built-in windshields. It will be noticed that the ventilators are placed on the upper part of the bonnet, a feature adding

of this kind of car. The bonnet and body join in a straight smooth surface, the bonnet widening on all sides to meet the body in perfect streamline fashion.

Built-in Windshield

The windshield of the ventilating rain-vision type is of heavy construction and actually built into the cowl, being a part of it. Note that the top of the body is lower than the bonnet and cowl, also the substantial manner in which it joins the windshield. This idea is one of the secrets of streamline design and is a feature found on very few cars. Most cars of this type have a top-heavy, bulky appearance which, with the double cowl, completely spoils the fast sturdy lines of the streamline body. Note that the two doors, which are quite wide, are placed in the center of the car and that entrance to the front seats is through an aisle-way, this arrangement making entrance and exit easier as well as permitting the driver's compartment to be arranged exactly for his convenience rather than being made to serve as a passageway, as in all four-passenger roadsters.

This idea also avoids the cramped and pinched seating arrangement of the rear seat and still allows as much sociability with more comfort than in the commoner types. Since the rear seat is placed well in front of the rear axle, there is a compartment in the after part of the body behind the seat cushions for small parcels, bundles, the side curtains or lap robes.

There is also room in this part of the body for the one-man top which is entirely collapsible and folds into the body completely out of sight, an idea which adds much to the appearance of the car as well as being a perfectly logical place for a top. It can be seen that it will be always protected from dirt and dust and always ready for use at any time it is needed.

Note that the upholstery barely shows above the top of the body, this, however, in no way discounting its softness and thickness, the slightly tilted cushions resting flat on the floor of the body, being easily removed for renovation. Small lockers in the cowl serve for the usual space found under the front seat cushions. Note that the steering column is pitched quite

low and is placed near the cowl, which has an instrument board within easy reach to the appearance of this kind of car. The bonnet and body join in a straight smooth surface, the bonnet widening on all sides to meet the body in perfect streamline fashion which is in accordance with the latest design.

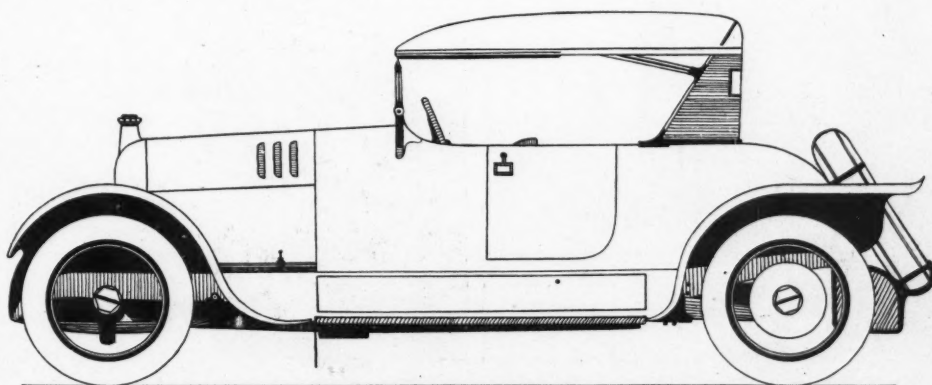
The body is slightly wider at the top and extends over the frame several inches, this in turn allowing space for the tools which are carried between the running boards and frame. The gas and oil are carried in the rear in a tank built rigidly onto the frame, which also serves as a tire rack for the tires, which are placed forward against the oval back of the body, their own weight holding them in place. Wire wheels with 34 by 4-inch cord tires are used with worm drive, the rear springs being of the heavy under-slung cantilever type with but little curve to insure quick action.

Note the oval one-piece fenders, especially the rear ones, a new kind of design for this kind of fender, and that the running boards are hung below the axles. A removable noiseless dust pan completely encloses the under part of the car. The bonnet, body and fenders are of cast aluminum, the ideal material for this kind of design, having light weight, comfortable, easy-riding qualities as well as being actually cheaper and easier to use than any other kind of metal which is at all suitable for this purpose, always taking a perfect finish and noticeable for the absence of that tin pan appearance so common in cheap metal bodies.

Four or Eight Cylinders

The motor is of four or eight cylinders with attached tire pump. The short bonnet permits the use of a roomy, comfortable body of good proportions. The color scheme is preferably a light one, with brown or black upholstery, black running gear, and all metal trimmings of polished brass. Light colors are necessary to show off the lines of a well designed body, as well as being fashionable at the present time.

The car here has the sturdy, well-built appearance of a roadster or phaeton and shows plainly that simple lines and good proportion are the secret to a luxurious body which does not necessarily imply that in order to get comfort and style one's pocketbook must be heavily taxed. Modern manufacturing methods have advanced to a point where it is reasonable to believe that a strictly highly-finished and comfortable car can be built at a price that will prove to be well within reason.—Julian F. Brason.



A New Yorker's idea of the perfect car

New Kissel Six Is Lighter Than Former Models

Characteristic Features Retained in Car of Reduced Price

BY a scientific reduction of the size of the parts and modifications necessary to the construction of a lighter vehicle, the Kissel Motor Car Co., in its new Hundred-Point six, has created a moderate priced car retaining the general principles of design and thorough workmanship which have characterized its previous models. The Hundred-Point is the smallest six that Kissel has brought out and sells for the lowest price, \$1,095 for touring and roadster. The 4-32 and 4-36 and the 6-42 have been discontinued.

The bore of the Hundred-Point is $\frac{3}{8}$ inch smaller than that in the 1916 model 42, while the stroke is $\frac{1}{2}$ inch smaller. A five-inch shorter wheelbase tends towards weight reduction throughout the chassis construction, in fact, the weight has been so reduced that tires of 32 by 4 inches are sufficient to handle the load. The 42 of 1916 was equipped with 35 by $4\frac{1}{2}$ -inch tires. It is economy to which the Kissel company is calling particular attention, this being due to the weight reduction, smaller motor and general refinements of design.

Motor Is Different

The motor is, in several ways a departure from former Kissel practice. The block cylinder casting forms the upper half of the crankcase and a pressed steel case completes the assembly. Bore is $3\frac{1}{4}$ inches and stroke 5 inches. The valves are completely housed and have a $1\frac{1}{8}$ -inch clear opening. Special lightened annealed iron is used in the pistons and they are balanced to one-half an ounce before grinding. Leak-proof type rings of grey iron several degrees softer than the cylinders make minimum wear on the cylinders.

The crankshaft is $34\frac{1}{8}$ inches long and operates in Fahrigh metal bearings of the following sizes: Front, $2\frac{1}{4}$ inches by $2\frac{1}{8}$ inches; center $2\frac{1}{4}$ inches by $2\frac{1}{2}$ inches;

rear $2\frac{1}{4}$ inches by 3 inches. Cams, bearings and all parts of the cam shaft are machined from a one-piece drop forging. Camshaft bearing sizes are: Front, $2\frac{1}{8}$ inches by $1\frac{1}{8}$ inches; center, $2\frac{1}{8}$ inches by 1 inch; rear, $1\frac{3}{4}$ inches by 1 inch. The timing gear construction makes use of one pressed fabroil gear working between two steel helical gears. The fabroil gear is instituted both to give the highest degree of wear and guard against noise. Lubrication is by combination force feed to the main crankshaft and splash to the connecting rods and pistons. The number of grease cups on the motor is reduced to two as oil cups are substituted at all lubricating points except at the circulating pump.

An entirely new Kissel-Stromberg carburetor has been designed for use on this particular motor, and the carburetor is fed by a Stewart vacuum system, the tank being mounted on the top of the motor.

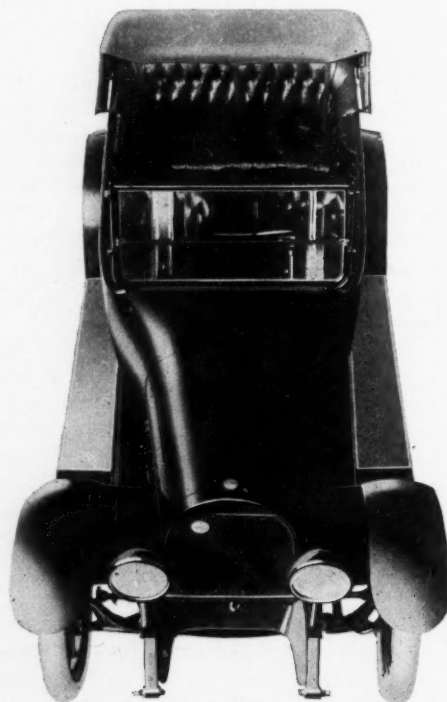
The differential case is a malleable casting and all differential parts are interchangeable. High carbon strip steel is used in the side rails of the frame, which is designed to give absolute rigidity and freedom from weave. Rattling and sprung doors are eliminated by this construction. The side members are narrowed to permit a short turning radius.

Rear Axle Retained

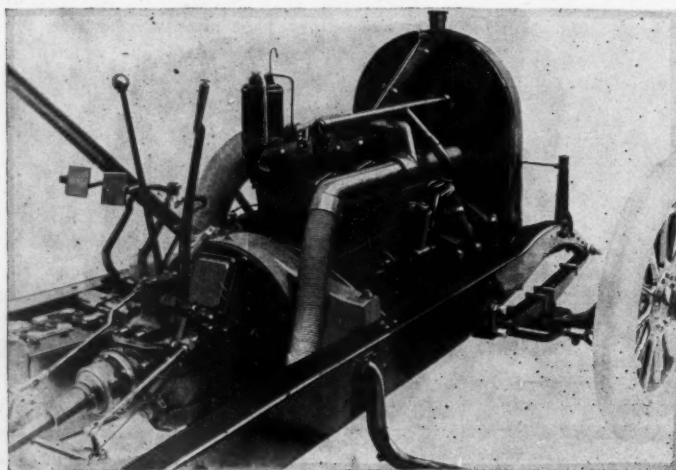
The distinctive floating rear axle with its design permitting easy adjustment of all bearings and of the pinion and ring gears is retained without change except for size reduction. The Kissel type of two sets of external contracting brakes, with 14-inch face and 2-inch diameter, is also evident. The elimination of internal brakes has as a purpose the riddance of rattling rods and levers.

A new feature for the 1917 six is the institution of oil bolts throughout the chassis in place of the conventional grease cups. These bolts are wicked from the bearing surface to a drilled hole through the center and the end is capped with a steel grease cap in the side of which is an oil hole. To lubricate the bearing, wherever it may be, it is only necessary to twist the cap until the holes in the cap and the bolt match up, and squirt in lubricant from an oil can. There are no grease cups to fill on the chassis.

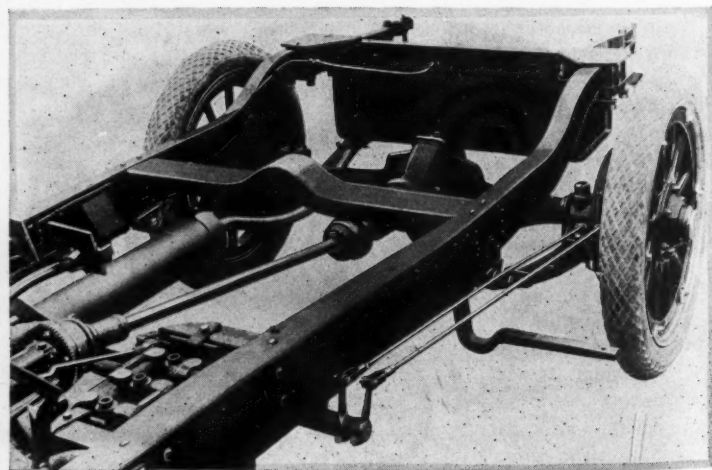
Due to its long, wide three-quarter elliptic springs the new car is as easy riding as the heavier six of this year. In the touring car the front seats are divided, a feature Kissel claims to have originated. Every feature of the body design savors of roominess. Black finish of all metal



View showing divided seats



The new frame design is clearly shown in this illustration



The Kissel rear axle construction is a modification of the 1916 design

parts in the body interior gives a distinctive richness.

Remy ignition, Remy generator and starter with Bendix drive screw enclosed in a housing in conjunction with a Willard battery make up the electrical system. The clutch is integral with the transmission and is cone leather with two adjustable fibre faced spring plungers acting as brakes against the rim of the clutch when disengaged. The clutch spider is a steel stamping. The gearset of the selective type, has three speeds forward and reverse, and the main shaft is mounted on large annular ball bearings. The gears are drop forged of nickel steel. The driving mechanism between the gearset and the rear axle consists of a set of two universals with a connecting shaft. The floating rear axle has spiral bevel gears and pinion and driving gears can be adjusted without disassembling the other parts. Timken bearings are used throughout. Drive and torque is taken through the rear springs with the Hotchkiss principle of drive.

The rear springs are underslung and designed to overcome sidesway and prevent road shocks. Drop forged shackles and hardened and ground suspension bolts, with grease cups replaced by large bolts with oil reservoirs complete the spring assembly. The front springs, semi-elliptic, are 36 inches long and 2 inches wide, and the rear, three-quarters elliptic, 52 inches long and 2¼ inches wide.

Malleable Gas Tank Support

The gasoline tank support also takes care of the tire holders for two tires. Two strongly riveted malleable brackets hold a 16-gallon tank, and the tail light and license bracket are carried in combination on the rear of the left support.

The bodies, like the engine, are Kissel built. The body frames, whether for touring car or all-year body, are built up of a massive wood and steel structure to stand the strain imposed upon them by the use of an all-year top. Twenty gauge sheet steel is used in the body, hood and fenders. The instruments are mounted in a straight line on a cowl board of circassian walnut and a Stewart Warner speedometer and the other cowl instruments are lighted at night by concealed lamps.

All electric wires are centralized in front of the cowl so that trouble may be instantly located. The body may be removed without cutting a wire. The body itself is low-hanging and fitted with blind doors and individual front seats, and genuine leather is used in the upholstery, with binding welts of double texture. Pure curled hair is form-pressed for stuffing and the carpets are all-wool and fast dyed. The slanting windshield has been adopted to give the body speedy lines.

The wheelbase is 117 inches. Goodyear tires, non-skid, in the rear, 32 by 4 inches all around and a one-man top complete the touring car equipment.

Although the all-year top will be featured for 1917 even stronger than it was this year by the Kissel company, the bodies

are not yet ready for announcement. The popularity of this type of car is evinced by the fact that nearly 50 per cent of the 1916 Kissel production was so equipped. The capacity of the factory has been practically doubled to take care of the Hundred-Point six production which will be the only model outside of the trucks, to be manufactured this season.

DESIGNER OF MERCER F

Trenton, N. J.—Editor Motor Age—In perusing the Motor Age of May 25, I find that Finley Robertson Porter, who was formerly employed by our company, in his biography is credited with the development of our type F Mercer racing motor, which showed such good results during the racing season of 1912 and 1913.

I wish to call your attention to the fact that this statement is erroneous. The motor in question, as well as the whole car, was designed by E. H. Delling, our present chief engineer. I am in a position to speak with authority on the matter, because I was then—as I am now—the president of the Mercer Automobile Co.—Wm. T. White.

HOLD ROAD-BUILDING BEE

Yucaipa, Cal., June 2—Bankers, lawyers, doctors and business men from Redlands, San Bernardino, Colton, Yucaipa, Banning and Beaumont met on common ground near here today and graded the last stretch of the Redlands-Beaumont direct road which cuts through this valley. The road building bee was worked up several weeks ago and several hundred of the prominent citizens of the various

towns interested turned out to complete the link in the road.

It is more than a link in the road between Redlands and Beaumont, for it is a very important section of the long road that traverses the continent, the Ocean-to-Ocean highway. The old route was down the San Timoteo canyon from Beaumont to Redlands; the new route cuts off about seven miles and is a better grade.

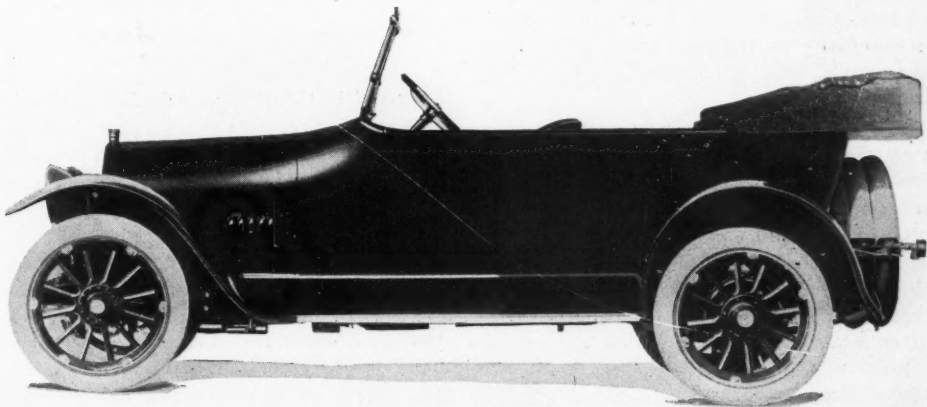
Work on the road was held up for several months because one man who owned the right of way in the Sears and Guthrie canyon refused to give the right of way for the road. This was secured several weeks ago and since then a force of men has been at work grading in a big fill in this canyon and building a bridge.

CLIMBS MT. WILSON IN HIGH

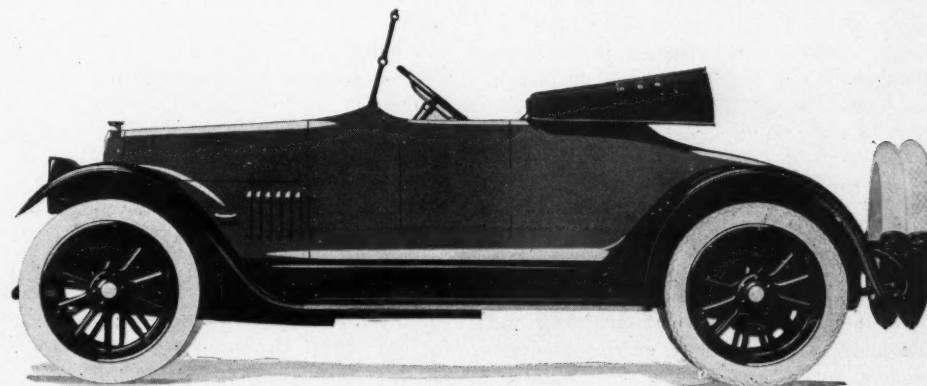
Altadena, Cal., June 2—A King eight climbed the famous Mount Wilson trail in high gear May 30. This is the first time that any car ever tried the steep grade in the high and the feat was accomplished by Jerry Woodill, the driver who piloted the King eight on its recent Los Angeles to San Francisco and return high gear test run.

Before the start the gears were sealed in high by the deputy sealer of weights and measures of Los Angeles and the other gears were removed. The gearset lever was sealed and there was no possibility of making the grade except in high gear.

The Mount Wilson trail is a fraction over 9 miles in length and the summit is 4,736 feet above sea level. In the 9 miles there are 120 turns.



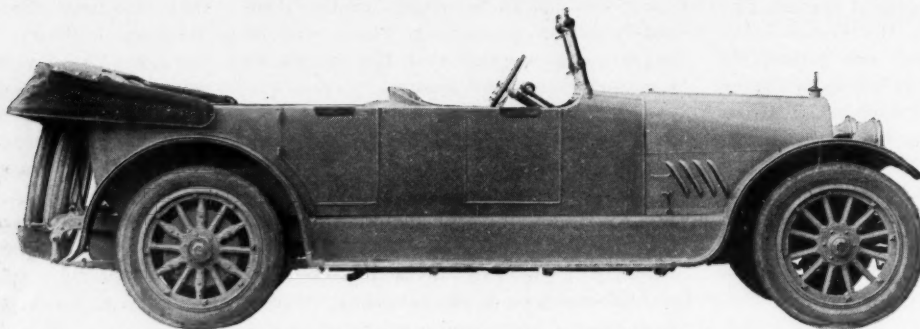
Kissel's new touring body



The Hundred Point six roadster

Single Chassis Program for McFarlan

1917 Six More Powerful and Looks It



New McFarlan touring car showing powerful lines

DISCONTINUING its policy of previous years the McFarlan Motor Co., Connerville, Ind., will devote its entire attention in 1917 production to one chassis and motor size. There have been no radical changes from the new six announced by this company in August, 1915, about the only new features incorporated being an increase in wheelbase length from 132 inches to 136 inches, improved body and frame designs and several marked refinements in the motor, chief among which is the new valve setting and arrangement of the combustion chamber. The new price of \$3,200, an increase of \$210 over last year on all open touring models, has been announced previously.

The cone clutch used for several seasons has been replaced by an extremely large three plate clutch, asbestos against steel running dry. The leverage has been increased until not over 6 pounds pressure is necessary on the foot pedal to operate the clutch, making an ideal condition for traffic use.

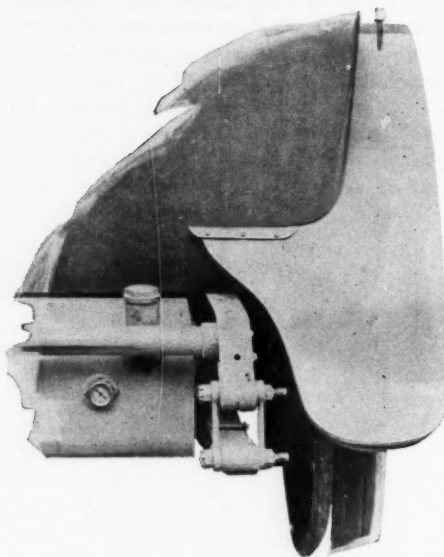
There is an entirely new frame under this model, which is drawn in at the front to afford a short turning radius and tapers back to a width of 40 inches, beginning in the middle of the front door, thus supporting the body directly under the sills. The frame is straight with the exception of a kick-up over the rear axle after which the rear horn of the frame returns to the same level as the front.

Motor More Powerful

The motor, of the T-head type, has a bore and stroke of $4\frac{1}{2}$ by 6 inches. The spark plugs are placed directly over the firing chamber. Because of the interior changes, the motor in the new 90 is said to develop appreciably more power than that in the parent model of last year.

The general appearance of the car has been changed somewhat due to the fact that it hangs almost 4 inches lower than the previous model, the top of the body panel being only 48 inches off the ground. This result has been achieved, however, without lessening the road clearance and the body is roomier and carries the passengers lower than before.

The McFarlan cradle spring suspension,



How the fender skirt is attached

instituted in the 1916 models, is continued. Cantilever springs are used, but instead of these being arched in the conventional way, they are perfectly flat and are shackled at both ends. They take no drive or torque stresses, thus permitting the double shackle suspension. This form of suspension allows the spring to be flat under normal load, and because of the fact that this construction allows an exceptionally slow return of the wheels, a very easy riding car is the result. The springs have fourteen leaves and are unusually large, having a width of 3 inches and a length of 58 inches.

A sub-frame mounted on two pressed-steel cross-members trussing the frame, makes the whole rigid and gives a most satisfactory mounting for motor and transmission. Two rear cross-members complete the frame assembly. This construction is designed to give the most rigid chassis with minimum weight. Timken bearings are used both in the steering knuckles and in the mounting of the front wheels. The rear axle, also of Timken make, is of the floating type. The same type of bearings are used throughout the gearset.

The gearset contains three speeds ahead

and reverse. Worm-bevel type ring and pinion gears are used in the differential. The steering gear is of the worm type with heavy pitch and face. A composition called condensite is used for the steering wheel. The danger of a splintered wood rim is eliminated with the use of this material, is the claim. The steering wheel is designed to tilt back out of the way for convenience in entering and leaving the driver's seat and is electrically heated for winter driving.

Braking System

The braking system is constructed to insure maximum safety and flexibility. With 17-inch drums, $2\frac{1}{2}$ inches wide, sufficient friction surface is provided to bring the car to an abrupt stop or to apply the brakes lightly without fear of seizing or chattering. Internal and external brakes connect with the service and emergency controls.

Firestone demountable rims and cord tires are standard equipment. The body designs bristle with individuality.

The bodies are of the true, double cowl, streamline design with the exception that the front backs are raised slightly out of the cowl to allow a higher and heavier upholstery than has formerly been employed. The same scheme has been followed out in the rear seat, the raise however, being completely hidden by the back curtain and back stays which are carried around the corner of the body, and while the car from the outside seems to have a very low back, the trimming on the inside extends from 4 inches above the line to the body proper. The windshield has been slightly slanted.

Characteristic ventilators in the top of the hood have been retained, doing away with the necessity of ventilating the front compartment.

The auxiliary seats are buried in a cabinet built into the double cowl and are completely hidden when not in use by flexible wooden curtains which are drawn down over them. Between the seats is a compartment, built in, capable of holding two quart thermos bottles.

The gasoline tank has been increased from 22 to 30 gallons capacity and the

tires are now carried in a stamped basket, spread completely across the rear of the chassis instead of on small pads as used on previous models.

RIM LICENSE FOR STANDARD WELDING

Cleveland, O., June 5—Termination of litigation between the Universal Rim Co., and the Standard Welding Co., came last week outside of court, the two concerns having been able to reach an agreement. By the terms of this agreement the Standard Welding Co. acknowledges the validity of patents by paying back royalties and taking out a 10-year license under these patents.

The Universal company brought suit against the Standard Welding Co., claiming infringement of three of its patents. The importance of the Standweld action is held in some quarters to be considerably accentuated by the circumstances that two of these patents are among those on which the Universal company and Baker are suing the Perlman Rim Corp., and the Jackson Rim Co. Because of the fact that the agreement between the Universal and Standard Welding companies was reached out of court, the suit cannot be said to have brought about any legal testing of the patents in question. No announcement is made of the Standard Welding company's plans following the taking out of the license.

DODGE NEGOTIATES GRAND CANYON

Detroit, Mich., June 5—"Death Valley Dodge" driven by O. K. Parker, of Los Angeles, has made a trip to the bottom of Grand Canyon of the Colorado and back to the rim. This is first time in history of motoring that the feat has ever been performed. It was impossible to use the burro trails and Mr. Parker made a new route to the bottom of the gorge, being compelled in many places to blast enormous rocks out of the way. The canyon was more than a mile deep at the point where the descent was made.

MANUFACTURE OF CARRIAGES LESS

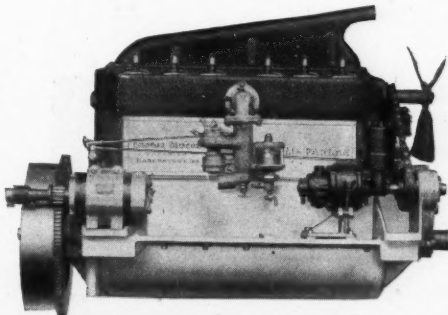
New York, June 2—The inroads of the motor car into the carriage and wagon in-

dustry during the period from 1909 to 1914 were greater in respect to passenger vehicles than those used for business purposes. In 1909, according to statistics gathered by the United States Bureau of the Census, carriages represented 53.2 per cent and wagons 39.7 per cent of all vehicles made, but in 1914 the proportion represented by carriages had declined to 47 per cent, while that represented by wagons had increased to 48.2 per cent.

In the preparation of the 1914 census of manufactures for the manufacture of carriages and wagons and of bodies, tops, cushions, hubs, felloes, spokes, wheels, and other materials used in the production of the complete vehicles, reports were received from 5,320 establishments, which manufactured 1,187,002 vehicles of all classes, valued at \$72,283,898. At the 1909 census there were reported 5,613 establishments, with an output of 1,584,571 vehicles, valued at \$94,037,900. The number of establishments thus decreased during the 5-year period by 293; the number of vehicles by 397,569, and the value by \$21,754,002.

FUEL QUIZ NEXT WEEK

Washington, D. C., June 3—An opportunity to explain the rise in the price of gasoline will be given various oil companies on June 12 and 13, when the federal trade commission will hold a series of meetings in this city. The commission is investigating the price increase in gasoline under a Senate resolution. It is announced by the commission that a report will be submitted within a few days after the hearings.



New McFarlan motor

The commission has sent letters to refiners, jobbers, pipe-line companies and crude oil producing companies throughout the country asking them for any information they might care to present in addition to that already uncovered by the commission.

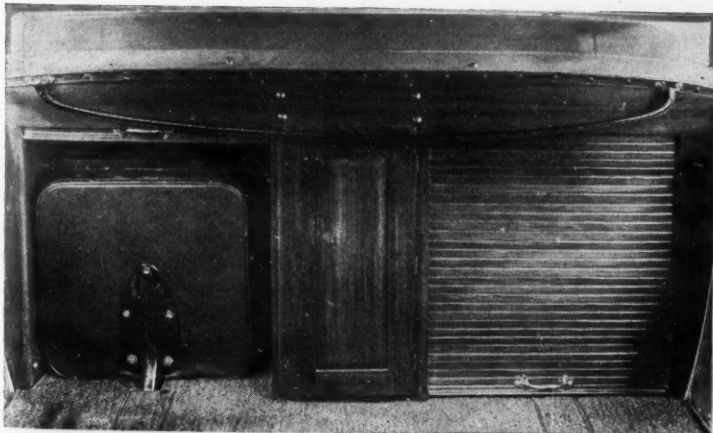
TO MAKE GASOLINE FROM GAS

Buffalo, N. Y., June 5—The latest entrant into the field to manufacture gasoline is the Manufacturers' Gas Co., having large gas fields in Elk County, Pennsylvania, which supplies gas for a large portion of northern Pennsylvania and western New York.

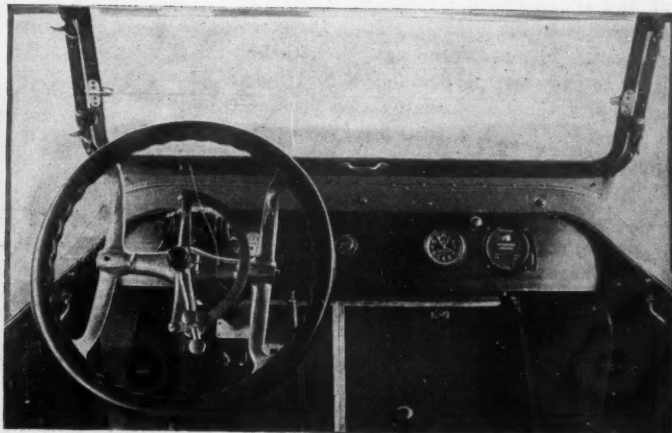
The Manufacturers' Gas Co. has a daily flow of approximately 10,000,000 cubic feet of gas. From this the gasoline will be extracted. Tests have shown that 1½ pints of gasoline can be manufactured from every 1,000 cubic feet of gas. The general process, except for the utilization of the gas under high pressure, is identical with the process of absorbing benzol and tulol vapors from coke-oven gases. The gas is not weakened to any extent for heating purposes. Tests have shown that through the process of extraction from 4 to 8 feet of gas disappear from every 1,000 cubic feet of gas.

JAMES K. STEWART DIES

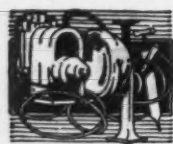
Chicago, June 3—James K. Stewart, one of the founders of the Stewart-Warner Speedometer Corp., this city, died last Thursday in New York of uremic poisoning. Mr. Stewart was at one time connected with the Chicago Flexible Shaft Co., and in 1906, with Mr. Clark, another man in the Chicago Flexible Shaft Co., formed the firm of Stewart & Clark, and began making speedometers. He was active in the Stewart-Warner company until 3 years ago, when he moved to New York and retired from active business. He was born in New York state 47 years ago and is survived by his widow and two children. The funeral took place today in New York. No changes will be made in the Stewart-Warner company on account of the passing off of Mr. Stewart, according to advices coming from the company.



Disposing of the spare seats in McFarlan behind a rolling door



Tilting steering wheel and switch unit of McFarlan



The Accessory Corner



Pump Driven by Rear Wheel

THE Harms Fresh-Air tire pump, put out by the Auto Appliance Co., Milwaukee, Wis., is made to fit any car with protruding hubs. To operate, it is necessary to fasten a crank on the rear hub cap, slip a slotted ring over the handle of the pump, fasten the bottom of the pump with a clamp onto the running board, jack up the wheel and run the motor in gear. It is claimed that, with the rear wheel running at about 100 revolutions per minute the pump will inflate a tire to the required pressure in less than a minute. The device is said to be superior to power pumps inasmuch as there is no danger of pumping oil into the tubes, according to the makers. The pump is made in four sizes to fit any of sixty makes of cars. The No. 1 pump is specially made for Ford cars. The price is \$3.50.

Rear Wheel Ford Brakes

With a view of providing a device to relieve strain on the gearset, universal and drive shaft created by use of the Ford transmission brake, the A. C. Mfg. Co., Chicago, is marketing a rear-wheel contracting band brake assembly to be operated from the service brake pedal. The attachment, outside of the band brakes and lever equipment, consists of two brake rods connected on one end with the brake levers and on the other with the two ends of an equalizing bar which is suspended in steel slots fastened to the frame. This bar is in turn connected with the service brake pedal by a single rod. The price of \$15 includes installation on the car.

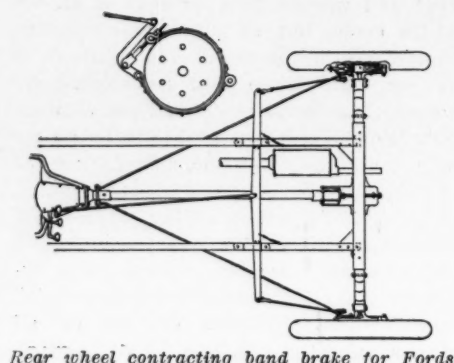
Safety Signal Device

An indicator in the shape of an electric signal replacing the tail light is manufactured by the Safety Signal Device Co., Detroit, Mich. The signal uses the same electric wires as are fitted for the tail light. It comes with its bulb already equipped for lighting at night. A flexible cable runs from the signal underneath the car and connects with a similar wire cable that also runs under the car from the steering post. The indicator can be attached either to the steering post or cowl. If used on the post there is a small clamp provided to fasten it. The indicator has a revolving wheel showing the words *slow*, *stop*, *right*, *left* and *neutral*.

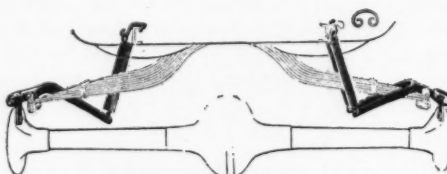
By setting the indicator at any of these words the same word is flashed on the signal at the rear of the car. The lettering on the signal is provided on a curtain which works on two rollers. As the letters are 4 inches high they can be very easily read day or night.

Shock Absorbers for Fords

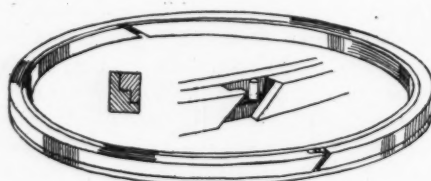
Forge steel cantilever shock absorbers are designed with the view of reducing



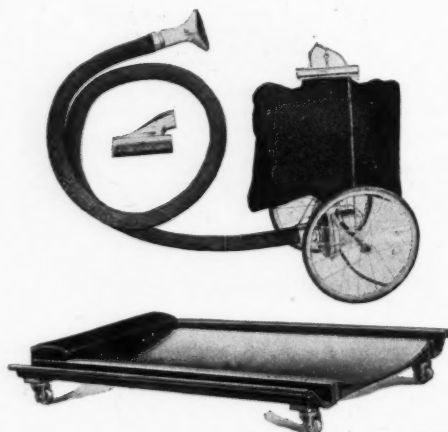
Rear wheel contracting band brake for Fords



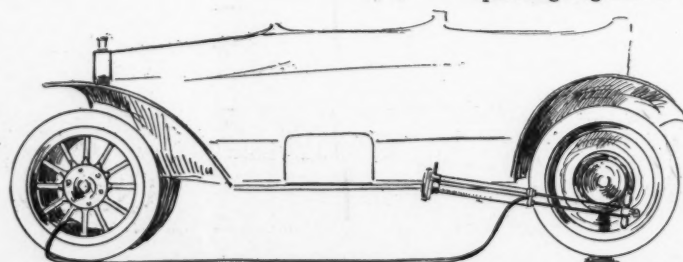
Cantilever shock absorbers for Fords



Novel high-compression piston ring



Vacuum cleaner for motor car renovation and new Mecca creeper for getting underneath



Harms fresh air pump, which is driven by the rear wheel

the speed and force of the recoil in Ford springs. They are a product of the Home Light Co., Chicago, Ill. The accompanying diagram shows very clearly the principle of construction. The slow spring action is brought about by locating the coil springs some distance from the ends of the car springs, thus creating the proper leverage to exert a downward pull of about 500 pounds, which tends to absorb a great portion of the recoil.

The shock absorbers are made entirely of steel. The levers, or arms, are made of 1½ by 3-inch stock and taper to the ends, making a very neat appearance.

The claim is that their use will minimize the strain on the tires and effect a considerable saving in gasoline inasmuch as rough roads can be negotiated with such ease that the driver does not slack up for street car tracks and rough places and then speed up his engine to get under way. Two types are offered, the single-arm and double-arm. The double-arm type has the advantage over the single-arm in that it is perfectly balanced so that there is no possibility of twisting action to cause difficulty in car steering. The price for a complete set of four single-arm absorbers is \$8. The double-arm type lists at \$10 complete.

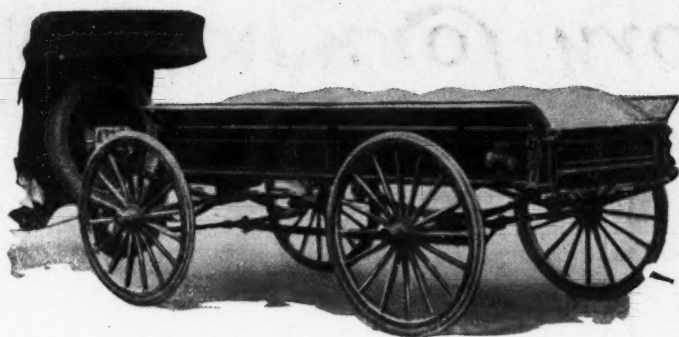
Trailers of All Sizes

A choice of five different models, both two and four-wheel, with capacities from 600 to 1,500 pounds, is offered in the line of trailers marketed by the Miami Trailer Co., Troy, Ohio. The use of Standard motor car parts and a shock-absorbing draw-bar coupling are designed to make the trailers reveal the use of Timken axles and bearings, solid or pneumatic tires, semi-elliptic springs, front and rear; electric tail light and a weight of from 300 to 600 pounds depending on the carrying capacity. The trailer is attached to the chassis of the car, not to the axle. Special bodies will be built to order to meet the requirements of any light hauling need.

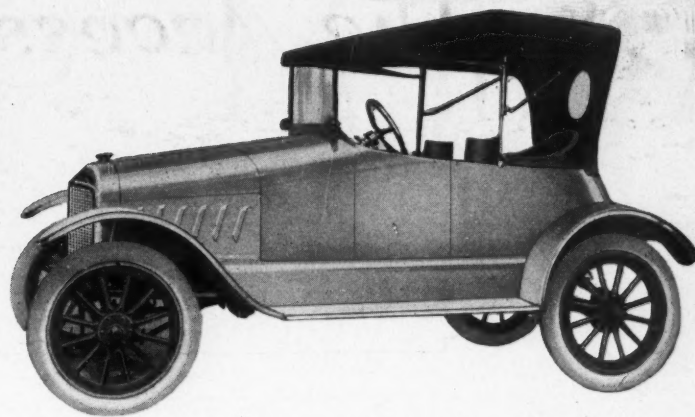
Hand-Made Ford Bodies

Class, speed and comfort are the claims made for the four types of bodies manufactured by the Auto Remodeling Co., Chicago, for use on Ford cars. The new three-passenger gunboat design is pictured here-

with. Another new product is the model S speedster, equipped with connected cowl and divided seat, back of seat diamond tufted. The equipment includes spring cushion, 20-gallon tank with rounded ends and brass filler



Light trailer equipped with Timken axles and bearings



Three-passenger gunboat design body for use on Ford cars

cap, extra-size tool compartment in rear, specially curved fenders, splash guards, and extra-long running boards, linoleum-covered and metal bound. The body lines are low and speedy.

The model T and model R are continued. The former is a bucket-seat roadster and the second a stripped racer design. Leather fabric is used in the upholstery. Mohair tops are fitted to each body and twenty gauge sheet steel is used throughout. Other products of this company are Remo 20-gauge steel gasoline tanks. Remo bucket-seats, and the B-R honeycomb radiator and streamline hood, all for use on Fords.

Sterling Utility Cleaner

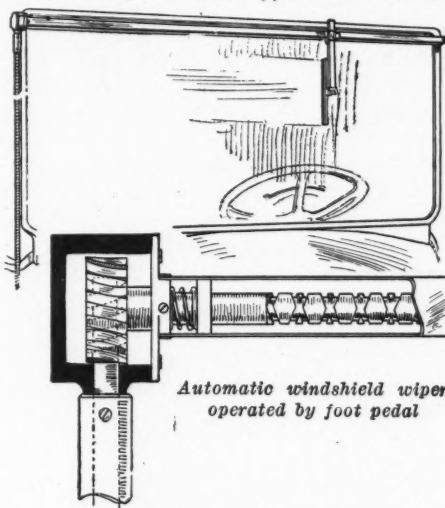
This cleaner is useful around a motor car both as a vacuum cleaner for use on the upholstery and floor coverings, and as a blower to remove dirt from places about the car that are ordinarily hard to get at. The device runs on two wheels and balances itself so that it may be wheeled about a car with ease. The complete weight is only 15 pounds.

To convert the cleaner from suction to blower it is only necessary to remove the dust bag and insert the hose in its place, an operation that can be performed in 30 seconds. The outfit consists of the machine, 20 feet of flexible electric cord, 8 feet of hose for suction and blowing, specially designed toothed nozzle and a brush for cleaning the cushions. It is manufactured by the Sterling Sales Co., Chicago, and is offered at \$29.50.

Light Repair Creeper

Many a motorist who has spoiled a suit of clothes in climbing under his car to make some repair begins to look around for

some kind of a device that will enable him to avoid this inconvenience, and just such a helper is found in the Mecca creeper, marketed by the Moeschl-Edwards Corrugating Co., Inc., Covington, Ky. The smooth steel, curved body, and soft head-



Automatic windshield wiper operated by foot pedal

rest make it almost as comfortable as a bed. On each side are pockets for the convenient location of tools, bolts, nuts and small parts. The creeper is 36 inches long and 20 inches wide, mounted on four casters. The soft leather headrest is furnished as regular equipment. The assembly weighs 15 pounds and sells at \$2.50.

High Compression Piston Ring

A high compression piston ring of new and novel design is being introduced by Albertson & Co., Sioux City, Ia. As will

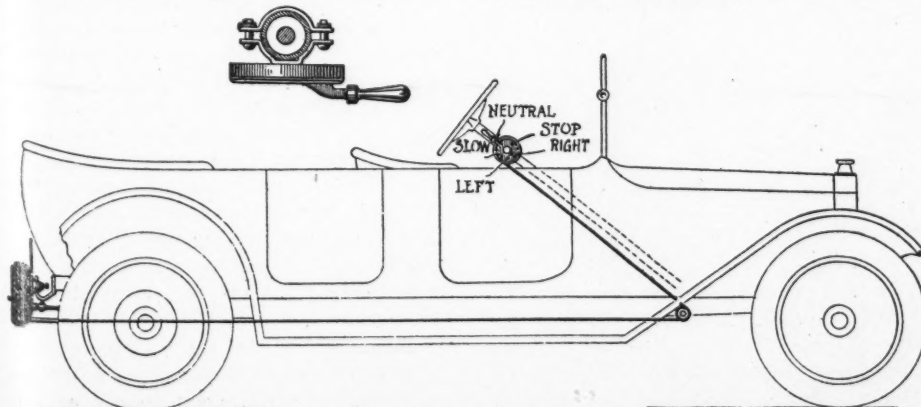
be noted from the accompanying illustration, the rings are made in two pieces which fit into each other and are held in position by small steel pins. A leak-proof ring which is thoroughly flexible and easy to assemble on the piston are the claims for its merits. The same company is also marketing a valve grinder designed especially to meet the need of a simple tool for this purpose which will do the work for which it is intended and still be inexpensive. By turning the handle continuously in the same direction of rotation the valve moves back and forth on its seat, a little farther in one direction than in the opposite, thereby producing an accurate reciprocating motion. The piston ring prices range from \$1 to \$1.50, according to size, and the valve grinder sells for \$7.

Automatic Windshield Wiper

With the new mechanism invented by Will Tesnow, Chicago, Ill., it is only necessary to push a foot pedal to operate a device which will automatically clean the windshield. The motive power for operating the cleaner comes from gearing attached to the drive shaft and operating a flexible shaft. This flexible shaft in turn drives a worm gear which is meshed into another worm on the end of a shaft which extends in a housing over the top of the windshield. This shaft is spiral cut with grooves to carry to wiper back and forth. By pressing a pedal, thus engaging the gears on the drive shaft, the wiper will travel back and forth across the windshield until the pedal is again released. The equipment, complete, will sell at \$10.

Gordon Rear Curtain Lights

Heretofore, the Ford owner who has had the misfortune to break the rear curtain light in his car, has found difficulty in replacing it, and often it has been necessary to employ a repair man to do it. The Gordon rear curtain light solves this problem by making it possible for him to remove the old and replace it in a few moments by means of the special fasteners supplied for the purpose. The cost is 70 cents and it may be secured from any first-class dealer who handles specialties, or direct from the J. P. Gordon Co., Columbus, O.



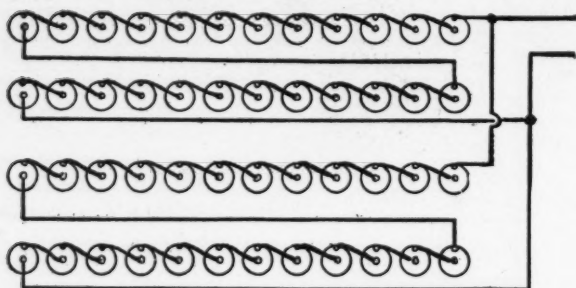
Safety signal device and the method of operation and attachment



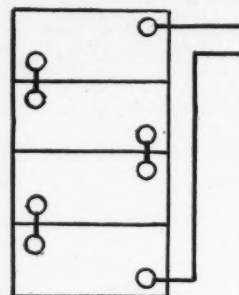
The Motor Car Repair Shop



Recharging a Ford Magneto



Dry cells would be too weak unless a large number were used



Three or four storage cells are used

A GREAT many owners of Fords have been desirous of finding some method by which the original properties of the magneto may be revived, so that they may get better light and a hotter spark, also, easier starting on the magneto. While the Ford magneto is as near foolproof, reliable and simple as one can be made, at the same time it does have the property of losing its original capacity. This, of course, is due to loss of flux, or charge, in the magnets and the contributing factors are time, vibration, cycles of heat and cold, and the demagnetizing effect of long continued use of current.

Fortunately, the steel of the magnets never loses its retaining powers—all that it loses being its flux, and for this reason, a magnet, as long as its original temper is preserved, needs only to be remagnetized to bring back its original strength of flux. **Old Method Took 4 Hours**

For a number of years, the only method most repairmen had was to take the engine all apart, dismantle the magnets and charge each magnet separately by a coil, run by batteries or direct-current lighting circuit. Then the magnets had to be carefully reassembled taking care not to pound them or get them reversed. This generally required the time of two experienced men for 4 hours, and did not give as good results as could be expected, due to the handling of the magnets.

Recently, methods for recharging the magnets without dismantling the engine have become better understood, so that now the whole process is one of less than a minute and only a small fraction of a cent's worth of current. In this method use is made of the fact that, if the windings are supplied with current of sufficiently high amperage, and the engine is so stopped that the center of a magnet is in front of the center of a coil, when current is applied, the full maximum output will again be obtained, lasting as long as the original charge.

It must be understood that the charge

By Victor Des Roches

the magnets can retain does not depend on how long the current is left on, as only a few seconds are necessary, but on whether or not the current is above the critical value to cause magnetization.

There are two ways of ascertaining when the magneto is in the proper position for remagnetizing in this manner. Get a small compass and hold it about on a

level with the insulated terminal in center of transmission case. Hold the compass about 1 inch to the left of an imaginary line running through this binding post and parallel to the frame of the car, also holding it about 5 or 6 inches back from this binding post. The engine is then turned over very slowly until the compass held in this position registers at a point about 1 inch to left of this post.

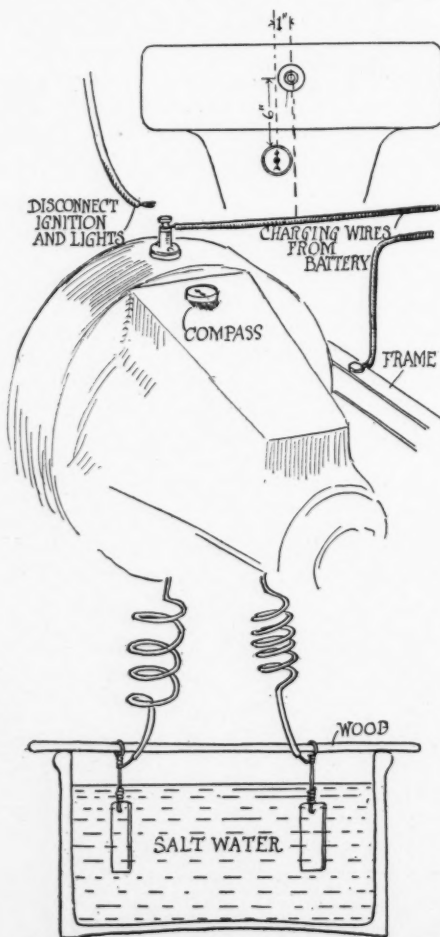
The other way, if one has no compass, is to take the cover of the transmission case off by removing its six machine screws, and after locating the brass studs in the rim of the flywheel, turning engine over very slowly until one of them is about in line with a point 1 inch to the left of the binding post. It is then ready to apply current.

Good Results with 24 Volts

Just the minimum current necessary is not known, but very fine results have been obtained with 24 volts from storage batteries. This allows 48 amperes to pass with the old-style magneto and 96 amperes with the new one. Dry cells would be too weak for this purpose, although if one had a sufficient number, by connecting twenty-four cells say in series, and connecting two such sets in parallel, requiring forty-eight cells in all, one might expect good results.

But storage batteries are becoming much more common, and only three or four 6-volt batteries are required. All that is necessary is, after connecting the storage cells in series, positive to negative, to connect one end of this battery to the frame of the car and the other to the binding post of the magneto, taking care to break the arc formed on opening the circuit slowly, and also making sure to disconnect the lights and coil from the magneto, as these may be burnt out from the high voltage used.

Three to 4 seconds are more than enough to complete the operation, when the normal capacity of the magneto will have returned and the wires may be disconnected.



Above, connections for recharging Ford magneto; below, salt-water rectifier

Occasionally one runs across a magneto with its magnets rubbing the coils. This will demagnetize it very quickly. There is nothing else to do in a case of this kind but to dismantle the engine and place a spacing washer of the necessary thickness against the shoulder of the crankshaft next to the flywheel. Sometimes the connections between the coils will become broken. In this case the magneto refuses to generate at all, or only generates once in a while, whenever vibration causes the contacts to come together.

This may be found by removing the upper half of the transmission case, without removing the engine from the car, as generally faults of this character are in the upper half of magneto. But if it is broken

in the lower half, the engine must be removed from the car and one must prepare for a good 4 hours' job.

It might be added also that if no batteries are at hand, and a direct current lighting circuit of about 110 volts is available, one can just as easily do the trick by running the current through a solution of salt and water, first overfusing the cut-outs, so that they will not let go from the large current. A current of at least 40 amperes is deemed advisable, and this can be obtained from using strong salt solution, as electrodes to the water rheostat thus obtained plates of at least a few square inches of surface should be used. These, of course, can be varied to get the right current.

lie works and the state engineer to adopt a schedule of fees for the registration of omnibuses that carry passengers and trucks for the transportation of freight. They are to classify the vehicles upon the basis of time and extent of use upon the highways relative to the wear and tear of the roads. The schedule is to be turned over to the secretary of state by the first of next year so that he may arrange for the collection of the fees.

C. A. C. CALLS FOR CARS

Chicago, June 6—The National committee of home defense motorists has appointed a committee from the members of the Chicago Automobile Club, headed by Joseph E. Callender, as chairman, to organize a motor reserve corps in Chicago. As its initial effort this committee will transport the First Infantry of the Illinois National Guard to its annual camp at Fort Sheridan, and to do this the services of 200 touring cars and fifteen trucks will be required. The committee is urging every member of the club to volunteer the use of his car and services. They will report to the commanding officer of the First Infantry in Grant Park, Sunday morning, July 16, at 8:30 and remain under his jurisdiction until the soldiers are detained at Fort Sheridan. No passengers or guests will be carried except the car owner or a person designated by him to act in his place. No roadsters can be used.

LEXINGTON SPEEDWAY CO. FORMED

Lexington, Ky., June 2—The Lexington Speedway Co., this city, has been organized for the purpose of building a \$300,000 motor speedway. The incorporators are J. T. McKee, Rosdale, Ky., and G. M. McCarthy, Louisville.

AUBRY WINS TACOMA EVENTS

Tacoma, Wash., June 5—Special telegram—Ulysses Aubry, driving a Tacoma Special, won both events at the speedway yesterday. Aubry covered 30 miles in 21:48, Parsons, in a Stutz, 23:05½. P. J. Erdman, in a Ford, made 20-mile race in 18:19 and stayed the distance in 30-mile event. Aubry's time for the 20-mile race was 13:55, Parsons' 15:39. In each event Aubry jumped into the lead and was never headed. Aubry made several laps in 1:30.

Mrs. P. W. Heald, Buick, was the winner in backing event. In the winner's driving contest Mrs. H. E. Oneal won. Parsons in a Stutz and Herbert Munter in an aeroplane staged an exhibition race.

NEW MENOMINEE TRUCK MODELS

Menominee, Mich., June 5—The Menominee Motor Truck Co., formerly the D. F. Poyer Co., shortly will announce the details of two new worm-drive models. One is the model E W of ¾-ton at \$1,295 for the chassis only and the other, a larger one, model H, of 1½-tons capacity, at \$1,775.

120 Trucks Replace 60,000 Oxen

Bulgarian Army Finds New Transportation Much More Efficacious

WITH the Bulgarian Army, Macedonian Front May 10—The motor truck has revolutionized transportation for the Bulgarian army. Figures have been given proving that each truck used by that army has been doing the work of 500 oxen and 250 wagons each day.

In the past the Bulgarian army has depended entirely upon the ox wagon for the transportation of its food supplies and ammunition.

The truck carries a crew of two, is able to transport 6,000 pounds at an average speed of 15 miles per hour and runs 16 hours a day if necessary. This means that each truck replaces, at a 16-hour run, 180 ox wagons, 360 animals and about 200 men, as the ox wagon is in charge of one driver, and carries an average load of 600 pounds and moves at a speed of about 2½ miles per hour for 8 hours each day. Considering that the truck, with a capacity of more than 2 tons is by no means rare at the Macedonian front, and taking into consideration the length of the various lines of supply, the average for each truck is, 250 wagons, 500 animals and about 300 men.

These figures indicate that only about 120 trucks are necessary to permit the Bulgarian general staff to restore to the farms the 60,000 oxen which were furloughed some time ago. The change also liberated for the military service 30,000 men who had been drivers.

BLUE LAW BAN LIFTED

Springfield, Mass., June 3—The ban on Sunday sales of motor car supplies in Massachusetts has been lifted on the basis that they are included as necessary work. Motorists in this city in particular and throughout Massachusetts in general are breathing easier, and so are the garage men, as a result of Chief of Police William J. Quilty delving more deeply into

the law of Sunday sales. He had notified the garage men that the sale of gasoline was illegal on Sunday. There had been a prosecution, and as the legislature had refused to make a change in the law there seemed to be a deadlock with the prospect of the trouble spreading throughout the state.

Then some of the motor officials got busy and claimed that as gasoline is derived from gas, and the latter can be sold on Sunday gasoline could be retailed. Then Chief Quilty decided that the law that allows "necessary work" to be done on Sunday covered motoring, and so he notified the garage men that he would grant them permits.

BINDBEUTEL LEAVES MOTOR PRINT

New York, June 3—George T. Bindbeutel has resigned as editor of Motor Print to become active in other fields of endeavor. John Chapman Hilder is his successor. Mr. Bindbeutel has been editor of Motor Print since December, 1914.

KAISER STOPS PRIVATE MOTORING

Amsterdam, June 1—Owing to the alarming scarcity of gasoline, the German authorities have practically put a stop to the use of cars, not only by private individuals, but also by members of the neutral diplomatic corps in Berlin.

TAX ON ROAD WEAR

Albany, N. Y., June 1—All owners of motor cars and motor trucks will have to pay additional fees to the state within a year because of the wear and tear of the vehicles on the highways. Governor Whitman has signed the Hewitt bill providing for the levy of the fees by February 1, next year.

The Hewitt bill directs the commissioner of highway, superintendent of pub-



Among the Makers and Dealers



TOWING a Balloon—A most unusual use for a motor car was found by the Goodyear Tire & Rubber Co. recently. The occasion was the final test of a perfected type of kite, or captive balloon which Goodyear has been building. Kite balloons of the type built by Goodyear have been developed by foreign governments for use in making military observations. "Kite balloon" refers to the method of rigging which is similar to that of a boy's kite. The balloon is let up into the air at the end of a wire cable and held at any height desired. In the Goodyear test this wire cable was passed over a drum, and power transmitted to the drum from the rear wheel of the motor car.

been let for two additional buildings, one of which is 280 feet long and 60 feet wide and four stories high, while the other is 320 feet long and 60 feet wide and two stories high.

Goodyear Building at Dallas—The Goodyear Tire & Rubber Co. has closed a contract for the erection of a three-story building at Dallas, Tex. It will be the tire concern's southwestern distributing point.

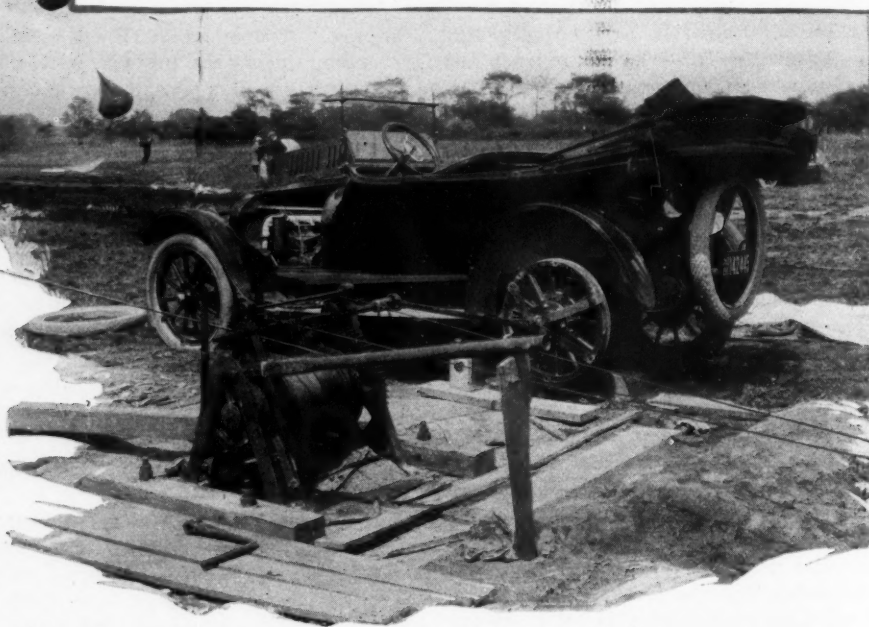
Goodyear Increases Preferred Capital—The Goodyear Tire & Rubber Co., Akron, O., has increased its preferred stock from \$7,000,000 to \$25,000,000. The fee for the increased capitalization

age owners, supply dealers, salesmen and car agents, decided to turn over the organization to the garage owners when a movement was put under way for an association exclusively for garage owners. In consequence, the name was changed.

Lyman Joins Cassidy—H. S. Lyman has resigned as Indiana factory and jobbers' representative of the H. W. Johns-Manville Co. to represent Edward A. Cassidy Co., New York.

Chandler Gives Employees Bonus—The Chandler Motor Car Co., Cleveland, O., will pay to all employees on the payroll of the company July 1, 1916, a sum equal to 5 per cent on all wages paid, including overtime, to each employe during the year commencing July 1, 1915, and ending June 30, 1916. This amount will be paid with the July 20 payroll.

Four-Wheel Drive Adds—The Four-Wheel Drive Automobile Co., Clintonville, Wis., is preparing to build another addition, 100 by



LINK Redden Chief Engineer—Vincent Link, formerly chief engineer of the Universal Motor Truck Co., Detroit, Mich., has been engaged as consulting engineer of the Redden Motor Truck Co.

American Brass Adding at Kenosha—The American Brass Co., Waterbury, Conn., operating a large rolling mill and brass foundry at Kenosha, Wis., has made public plans for improvements at Kenosha to cost between \$1,600,000 and \$2,000,000, which will make the local works the largest of the kind in the country. At the same time about \$400,000 will be expended in enlarging the Waterbury works. At Kenosha the brass mill will be enlarged by an addition 320 by 225 feet, and the foundry by an addition 320 by 200 feet.

Standard Starts New Building—The Standard Steel Car Co., Pittsburgh, Pa., has broken ground for a new plant which will be over ½ mile long and 60 feet wide. This is to be the assembly department and is to be without a single inside post or pillar through its whole length. One of the buildings, heretofore used in another line of manufacture, has been referred to the motor car department for the manufacture of axles. Contracts have also

is \$18,000. The common stock of the company already amounts to \$25,000,000, making a total capital of \$50,000,000.

Aluminum Goods Increasing Plant—The Aluminum Goods Mfg. Co., Manitowoc, Wis., which is building a five-story manufacturing building, 50 by 300 feet, will erect a 50 by 150-foot shop addition as soon as possible.

Body Makers' Strike Settled—The strike of more than 200 body builders in the plant of the Charles Abresch Co., Milwaukee, Wis., manufacturer of motor car and truck bodies, has been settled by arbitration and the men are back at work.

On March 1 the Abresch company determined to establish the open shop policy and refused to renew the closed shop agreement. Under the terms of the settlement the shop is again closed and most of the work will be piecework.

Association Changes Name—The Wisconsin Garage Owners' Association is the name of the reorganized Wisconsin Automobile Business Association. Change of the corporate style has been authorized by the secretary of state. As was noted previously, the business association, composed of gar-

175 feet. Early this year ground was broken for a structure of similar size, but the capacity is still inadequate, making a second building necessary.

Ward Leonard Moves to Mt. Vernon—The Ward Leonard Electric Co. has moved into its new building, Mount Vernon, N. Y. The need of more space and labor operators was the reason for the company moving from Bronxville. The floorspace has been increased approximately 50 per cent.

Door Maker Adding—The England Mfg. Co., making a specialty of pressed steel door panels for motor cars, and at present located in Detroit, Mich., has acquired a 3-acre factory site adjoining the plants of the Federal Motor Truck Co., and contemplates building a plant comprising 54,000 square feet of floor space to enlarge its business in its specialty. The plant is to be ready for occupancy in 60 days.

Castings Company Organized—The Motor Castings Co., Detroit, Mich., has recently been organized to manufacture cylinder castings only. The foundry is located on Hart avenue and the showroom and general sales office have been opened at 997 Woodward

avenue. The officers of the company are J. D. Curry, president; E. H. Briggs, vice-president; W. T. Cullen, sales manager, and J. A. Lanigan, general manager.

Jordan Takes Title to Land—The Jordan Motor Car Co., Cleveland, O., has taken title to a tract of 5 acres it recently purchased. The first building, a \$50,000 structure, now is being erected on the land.

American Motor Plans Plant—Tentative plans have been completed by the American Motor Co. for a factory group in Plainfield, N. J. The main building will be 860 feet long by 60 feet wide and several smaller buildings are to be built.

Sterns Tire in St. Louis—Plans have been completed by Edward Sterns, president of the Efficiency Oil Corp., and the inventor of the Sterns inner tube, to establish in this city a tire and inner tube plant. The new tire company will be known as the Sterns Tire & Tube Co.

Parts Maker May Move—Schroeder Bros., Milwaukee, Wis., manufacturing motor car and truck bodies, have practically closed a deal with the Commercial Club of Dodgeville, Wis., for the removal of the plant and business to that city. Facilities are offered which will make it possible to more than double the present output.

Tank Company Moves—The Milwaukee Tank Works, Milwaukee, Wis., has leased the five-story manufacturing building at Kinnickinnic avenue and Becher street, and will move its plant as soon as alterations have been completed. The manufacturing space will be nearly tripled by the move. R. L. Bienenstock is president of the company.

Dealers May Close Sunday—Coincident with the agitation now going on in Milwaukee, Wis., to start the day one hour earlier, the "Day of Rest" idea has come to attention and a majority of the members of the Milwaukee Automobile Dealers, Inc., have determined that hereafter their salesrooms will be closed all day Sunday, instead of being open during the morning. Engagements with persons for demonstrations on the next few Sundays will be kept, but thereafter no work will be done by the sales department on Sunday. The service stations will be open as usual with a reasonable number of experts on hand to fill requirements from customers.

Portage Stock to Pay Dividend—The common stock of the Portage Rubber Co., Baraberton, O., has been placed on a dividend basis by the directors of the company. Starting August 15, a quarterly dividend of 2 per cent will be paid to stockholders of record, April 5. The proposition of increasing the authorized capital of the company will be put up to the stockholders at a meeting to be held July 1. It is proposed to increase the capital from \$1,125,000 to \$3,000,000. Of the increase, \$250,000 is to be preferred stock and \$1,500,000 common. All stockholders will be given the privilege of buying the new issue of preferred stock. The common stock will not be issued for the present. James Christy is president of the company.

Dealers Join in Price-Cutting Protest—Dealers in Beloit, Wis., have taken the initial step in the direction of forming an association for mutual profit. At the first meeting, fifteen dealers were present and the idea prevailed that a principal object of the new organization is to fight the price-cutting dealer. Ralph Dahl was elected temporary chairman and the organization committee consists of George Slater, Christ Mattison and H. B. Rowe. Every member will pledge himself to maintain the list price of his cars and an attempt will be made to fix standards of prices for used cars taken in exchange. The industry in Beloit has suffered severely by reason of cut

prices and the fixing of inflated values upon second-hand cars, and the new association intends to minimize, if not entirely stop both practices.

U. S. L. to Add to Plant—The United States Light & Heat Corp., New York, will produce in the next 12 months considerably over 300,000 U. S. L. batteries. Additions are now being made to its plans at Niagara Falls to take care of this increased demand.

Georgia Registration 40,000—Registrations in Georgia this year show a substantial increase over the registration of former years. There are approximately 40,000 machines registered now, and the total registration will considerably exceed this number.

Lefever Arms Now Durston Gear—The corporate existence of the Lefever Arms Co., Syracuse, N. Y., ceased June 1, when it became known as the Durston Gear Co., Inc. The management of the new corporation is the same as is the ownership and financial responsibility.

Auto Parts Increases Capital—The Auto Parts Mfg. Co., Milwaukee, Wis., has increased its capital stock from \$35,000 to \$50,000. The company recently was reorganized and is growing so rapidly that it was necessary to increase the capital to accommodate the greater volume of business. Walter N. Schwab is general manager.

Waukesha Engines Block Test Fuel—It is reported from Waukesha, Wis., that the high price of gasoline has made it advisable for the Waukesha Motor Co., a large producer of passenger and commercial car engines, to substitute artificial illuminating gas as fuel for engines running on the blocks. The company has made a contract with the Waukesha Gas Co. for 2,000,000 feet of gas a month for a period of five years and new lines are now being laid throughout the assembling and testing floors.

Demonstrators Exempt from Speeding?—To ask the municipal commissioners to exempt motor car demonstrators and agents from violations of the city speed laws when showing prospects the capabilities of their machines is the object of a committee of Winnipeg dealers which will be elected in the near future. During the last two weeks several salesmen and demonstrators have been arrested on speeding charges by motorcycle policemen. Technically they had broken the law, but they wish leniency to be shown toward them because of the position they occupy. "We cannot possibly conform with the speed laws. Not without losing sales, any-

way," declared a local agent. "The mere fact that we let a car out for a distance of, we'll say a mile, doesn't tend to show that we are liable to punishment as speeders."

Buys Great Western—Samuel Levy & Co., auctioneers, have purchased the entire assets of the Great Western Automobile Co., Peru, Ind. The purchase included not only all stock and material but the real estate and everything pertaining to the company. It is the new concern's intention to continue the operation of the service department of this concern for the time being and inside of the next month or 6 weeks to sell all material of every kind and nature, including the real estate, at auction.

Dodge Buys Additional Space—Dodge Bros. continues to expand its plants, as evidenced by the purchase of property along Whiting avenue, in Detroit, Mich., adjoining present buildings. An effort is being made to close this thoroughfare, but so far this action has not been approved by the Hamtramck council, the Detroit suburb in which the Dodge property is located. Just what the new factory additions that will be erected on this land will be utilized for is not stated, but it is expected that the added floor space will make possible the augmenting of the Dodge payroll by some 3,000 men.

Johnson Employees Get Increase—S. C. Johnson & Son, manufacturing Johnson's prepared wax and cleanser, gave their entire force of employees an agreeable surprise on the last pay-day by adding 10 per cent to their checks and announcing that all wages will be 10 per cent higher in the future. The company employs about 200 men and the wage increase means an additional outlay of \$15,000 annually. The action was taken to carry out the wishes of S. C. Johnson and Herbert F. Johnson, owners of the concern, that the employees share in the prosperous condition of the business.

White Tractor Plant to Be Enlarged—Rollin H. White has purchased 18 acres of land in Cleveland, O., giving a total of 61 acres for the manufacture of tractors. It has been announced that the farm tractor plant is eventually to be a \$1,000,000 plant. The parcel of land just bought is directly in the rear of 43 acres fronting in Euclid avenue, just east of the Baltimore & Ohio railroad's bluestone quarry branch railway, which Mr. White purchased last fall. Mr. White has plans made for gradual development of the tract and eventually expects to use the whole of it for factory buildings and storage yards.



Stearns dealer in Los Angeles, Cal., demonstrated the clutch of the car by making wheel close case of watch

From the Four Winds



FOUR WHEEL DRIVE REPAIR TRUCK—The Four Wheel Drive Auto Co., Clintonville, is making light repair trucks for the government. The illustration shows one of the repair trucks. Two out of an order of eight already have been delivered. These trucks are fitted for repair work on the road for any truck which may be in trouble. They are expected to be extremely valuable in maintaining the long line of supply trucks in good shape. And as trucks are the backbone of the line of communication between the army in Mexico and their bases in Texas it may be readily understood that these repair trucks are vitally important. Each truck is equipped with: 13-inch lathe with 5-foot bed; drill press; grinder; portable drill; cabinet bench; three vises; forge; three anvils; oxygen acetylene welding outfit; complete set of blacksmith's tools; complete set of machine bench tools; set of carpenter's tools. A nine-horsepower four-cylinder gasoline motor drives a dynamo which furnishes power to the motors which operate the various machines and supplies the current for the electric light. Oxygen and acetylene tanks are carried under the truck frame, leaving them accessible but economizing space.

KANSAN County's Motors Increase—Licenses numbering nearly 1,400 have been issued for motors in Marshall county, Kansas, this year, against 800 issued last year.

Kenosha Rural Route Motorized—Beginning on June 1, every carrier in the rural free delivery service in Kenosha county started to cover his route in a motor car. All horse-drawn equipment has been abandoned. This is the first county in Wisconsin to have exclusive motor-propelled mail-carrying equipment.

Speeders Must Give Bail—Chief Hammill, of the police of Kansas City, Mo., has threatened motorists with the necessity of giving bail for appearance in police court after arrest unless they are more prompt in making such appearance. It has been the custom to allow car owners to go, after arrest, on their own recognizance.

Gospel Bus in K. C.—The gospel motor bus has made its appearance in Kansas City. It is a used machine, purchased at a bargain by the Rev. John E. Matthews, pastor of the Church of the Nazarene. It will be used this summer to carry preachers and singers, who will conduct services at street corners from it. The seating capacity is fifteen.

Hutchinson, Kan., Would Clear Streets—Eight years ago Hutchinson, Kan., enacted an ordinance removing hitching posts from Main street, because of the congestion of teams on Saturdays and fete days. Retailers and farmers raised such a row that the measure was never enforced—it was referred to as a law that the car owners had tried to impose on the public. The city is now trying to find a way to enforce this ordinance as a curb on the parking of cars on Main street. There are more than 3,000 motor cars in Reno county; most of them are farmers' cars. Pretty Prairie, a town of

400 inhabitants, has one team listed for taxation, and 80 motor cars—or one for every family.

Cincinnati Would Prohibit Curb Stands—The city council of Cincinnati, O., is in the midst of a fight on an ordinance restricting the erection of gasoline storage tanks in residential sections of that city.

Duluth Protests Wheel Tax—Under the auspices of the Automobile Club of Duluth, Minn., a move has begun to test the city wheel tax in the courts. At a meeting of 500 car owners President J. D. Park, of the club, was authorized to appoint a committee of seven to take the steps. Jens Jenswold, Jr., has been engaged as special counsel. Seventy-five new members were added to take part in the campaign. The tax is held

unjust in addition to the personal property tax on cars. The law went into effect July, 1910. The tax is 50 cents per horsepower for motor cars and \$10 per ton for trucks.

Ontario-Ohio Tag Reciprocity—W. H. Walker, Ohio register of motor cars, has received a communication from the province of Ontario asking for reciprocity in the use of motor licenses between Ontario and the states of Ohio, Pennsylvania and Indiana. Mr. Walker is ready to enter into an arrangement for reciprocity by which Ohio tags will be recognized in Canada, and vice versa.

Illinois Registrations 170,000—In the first 4 months of this year 170,000 registrations for motor cars were filed in the office of the secretary of state of Illinois. This is five-sixths of the total number registered during 1915. It is expected that this number will be increased by 40,000 to 50,000 before the close of the present year, due chiefly to the improved condition of Illinois roads and the prosperous conditions of the country. At the present time, 2,500 sets of license plates are being shipped out by the motor vehicle department each day.

Jitney Ordinance Upheld—The supreme court of Minnesota has upheld the jitney ordinance of Duluth, Minn. Police are notifying the jitney operators to take out licenses at once. They must pay a wheel tax also. The law provides strict regulations and the filing of accident bonds. The ordinance has had a stormy time. It was passed in May, 1915. Before effective a referendum petition was filed against it. It was agreed with jitney operators certain provisions would be withdrawn. The ordinance was repealed. Some jitneys refused to abide by the agreement as to the second ordinance. One driver offered himself as test. The court held that the second ordinance differed in important

Coming Motor Events

CONVENTIONS

June 12-16—S. A. E. annual cruise, Lake Huron and Georgian Bay.

TRACTOR DEMONSTRATIONS

July 17-21—Dallas Tex.
 July 24-28—Hutchinson, Kan.
 July 31-Aug. 4—St. Louis, Mo.
 Aug. 7-11—Fremont, Neb.
 Aug. 14-18—Cedar Rapids, Ia.
 Aug. 21-25—Bloomington, Ill.
 Aug. 28-Sept. 1—Indianapolis, Ind.
 Sept. 4-8—Madison, Wis.

particulars from the first and that the evidence did not show the council acted in bad faith.

Many Old Haynes Cars Found—One hundred and twenty-one old car owners have replied to the inquiry of the Haynes Automobile Co., Kokomo, Ind., for the oldest Haynes car in service. New York leads the states with twenty-three cars that were built before 1907.

New Park Regulations—Regulations governing the admission of motor cars into the Mount Tacoma National Park have been revised and the fees fixed at \$4 for a single round trip and \$6 for the season. The permissible speed has been raised from 6 to 8 miles per hour. Otherwise the regulations are the same as those of 1915.

Will Teach Tractor Engineering—A short course in motor car and tractor engineering will be given this summer by the Colorado Agricultural College at Fort Collins. The special course will start June 19 and continue 6 weeks. It will be a practical course for garagemen, car owners, farmers, chauffeurs, threshermen, farming contractors and motor car and tractor salesmen.

Would Have Convicts Make Tags—License tags in Ohio for 1917 will have green letters and figures on a white background. That is the design announced by the secretary of state, who has asked for bids for 220,000 or more sets of tags for gasoline cars; 10,000 or more sets for electrics and 5,000 or more sets for dealers. A movement is on foot to have the tags made by prisoners of the Ohio penitentiary, but official sanction is apparently lacking.

Colorado Registrations 29,000—The 1916 motor car registration in Colorado already has reached the 29,000 mark, which is nearly 1,000 more than the total number of cars registered there last year. Besides, at least another 1,000 have likely been added to the records of the outside counties since the last returns were sent in to the secretary of state, inasmuch as these outside reports are coming in slowly, especially from the mountainous districts of higher elevation and snow still deep enough to block the roads. Denver alone has 9,127 cars to date.

Use Tractor Continuously—Rain and cold weather which has continued steadily through April and May in Illinois, has greatly retarded spring work among the farmers. Three farmers, however, determined to circumvent the weather man by purchasing a tractor and keeping it in continuous operation each 24 hours. The trio includes Oscar Poorman, William Shrader and Hugh Poorman, all of Douglas county. They formed a partnership, each paid one-third the cost of a tractor and each has been working it 8-hour shifts every 24 hours that rain did not interfere. By utilizing a powerful acetylene light, they have been able to operate during the night just as well as by day and they have thus accomplished more than twice the average day's work, plowing so far about 500 acres of land.

New Stolen Car Disposal Plan—A new method of disposing of stolen motor cars has been found. Governor Dunne, of Illinois, was a victim last week. Mr. and Mrs. Thomas E. King, claiming to be from California, secured a bona fide license for a Ford car from the secretary of state. Armed with this, they are said to have taken the car of the chief executive and driven it to St. Louis. Upon their arrival there the woman, giving the name of Simmons, went before a notary and made out a bill of sale for the car, transferring it to King. With the genuine license upon the car and the bill of sale as a guarantee of ownership, King, according to the police, went to a salvage firm of St. Louis and sold the car for \$225. Later, the firm suspecting that something was wrong, trailed the couple and notified the police.

By this time a wire from Springfield told of the theft and the arrest followed. The pair admitted their guilt.

Beloit Fire Department Motorized—The common council of Beloit, Wis., at the regular meeting on May 16 voted unanimously completely to motorize the fire and police departments, supplanting every horse-drawn vehicle and piece of apparatus with motor-propelled vehicles. A committee is now at work outlining the requirements.

New Illinois Jitney Ruling—The Illinois Utilities Commission issued an order last week prohibiting Alphonse Snyder, Quincy, Ill., from operating a jitney bus until a certificate of convenience and necessity is obtained. The case of R. Walter, who was found to be operating without regular schedules, was dismissed. Aurora has prepared a new ordinance governing jitney buses which replaces one knocked out by the courts a year ago. It calls for bonds and regular schedules. Although the jitneys are few in Aurora as compared with a year ago they still are a thorn in the side of the street railway company.

Good Roads Activities

Plan Big Idaho Road Improvement—The people of Nez Perces County, Idaho, claim the supremacy of the Northwest in good roads work. With a population of only 25,000 it is proposed to bring the total investment in good roads in the county up to \$600,000 before the end of 1916. Bonds for permanent roads have already been issued. In June Lapwai Valley Highway District will submit to the voters an issue of \$150,000, and this with the general county disbursements will bring the total near \$600,000, exclusive of state expenditures and appropriations.

Will Boost for Roads—The Motor Car Dealers' Association, Kansas City, Mo., will plunge actively into good roads propaganda during June. E. E. Peake, secretary, has perfected his plans for the Thousand Club, which had been so widely welcomed, and it will be organized at once. J. B. Clarkson, general manager of the Jefferson highway, will spend a week in Kansas City early in

June, in the interests of the highway and of good roads. He will speak before several civic bodies, and will help start the Thousand Club.

College Course in Road Engineering—Pennsylvania State College, in endeavoring to increase interest in good roads, has introduced a short course in highway engineering. The course is intended to educate people in the benefit of good roads.

Kansas City Boosts Roads—Various civic clubs and business men's organizations in Kansas City, Mo., are taking active part in raising money for good roads movements, and such bodies as the Real Estate Exchange are preparing broad plans for constructive promotion of highways.

Inducements for Road Workers—As an inducement for the citizens of Sullivan county to take serious interest in the good roads movement which will be celebrated in Pennsylvania this month, the taxpayers are being offered a reduction in the number of mills per dollar in the tax for road purposes, providing they give their labor, time and teams for work on the roads on "State-Wide Good Roads Day."

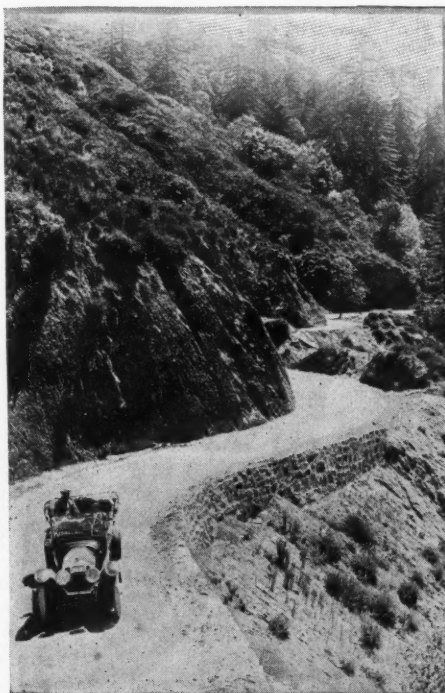
Minnesotans Form Highway Association—The Mille Lacs-Leech Lake-Jefferson Highway Association has been formed by men from Crow Wing, Mille Lacs and Cass counties, Minnesota. A brief will be sent to the state highway commission for the route passing through Brainerd skirting Mille Lacs and Gull Lake. Dr. F. L. Wilcox, Walker, was elected president; secretary, C. E. Hansing, Brainerd.

Indorse Detroit-Laredo Paved Way—The proposed international paved highway from Detroit, Mich., to Laredo, Tex., via Dallas was indorsed recently at a meeting of the members of the Dallas Automobile Club. At the meeting the directors endorsed the proposition. E. J. Hernan, Washington, D. C., met with the local club. For 8 months he has been touring Texas in the interest of good roads.

Wants Highway Commission in Texas—Z. E. Marvin, president of the Dallas Automobile Club, Dallas, Tex., is advocating for Texas a state highway commission. Indications are that the proposition will receive support in the next legislature. Backed by the Dallas Automobile Club directors, the proposition is to be placed before the people of Texas. Mr. Marvin points out that Texas should receive at least \$1,000,000 of the Federal appropriation of \$25,000,000.

Burlington Way Route Decided—It has been definitely decided that the Burlington Way between Beardstown and Rock Island, Ill., will be operated via Roseville and Monmouth. This decision was reached at a recent meeting held in Bushnell, Ill., and a committee was appointed to select the roads for that division. There are several lines between Bushnell and Monmouth which are under discussion and the committee will select the one which appears most attractive for tourists.

Marking Meridian Trail—The Meridian trail, the new highway for motor cars between Wisconsin and Cairo, Ill., is being marked. The route follows the third principal meridian, going through Rockford, Rochelle, Mendota, La Salle, Bloomington, Clinton and Decatur. The emblem that is being used to mark the poles along the trail is a yellow band, 20 inches wide, with a vertical black line crossing it. Upon this line will be the letter "M," as a more explicit identification of the route. The highway will be largely composed of oiled or gravel sections and the various counties along the route are giving the appeal of the promoters for proper maintenance, encouraging consideration. Malcom MacKinnon, Rockford, secretary of the Meridian Highway Association, is exercising supervision of the trail marking.



A Kessel-Kar was the first machine to traverse the Road of Enchantment in San Mateo county, Cal., before its formal opening.

With the Motor Clubs



DENVER CLUB'S NEW COUNTRY QUARTERS—Exclusive country home quarters for its members have been leased by the Denver Motor Club for the summer in Mount Morrison Hotel, in the foothills 17 miles west of Denver, at the mouth of picturesque Bear Creek Canyon. The site is adjacent to the municipal system of mountain parks, and the hotel is about a quarter of a mile from the canyon boulevard and located on higher ground, affording an excellent view of the canyon, the mountain village of Morrison and the pillars of volcanic formations in the Park of the Red Rocks. This attractive trip will be taken during the summer and fall by thousands of motorists from all sections of America, and doubtless also by many from distant lands, and the club quarters will be visited by large numbers of these travelers, especially members of other motoring organizations. Easily reached by a new road from Den-

ver, and also by good roads from Golden, Idaho Springs, Littleton, Boulder and other nearby towns having members in the Denver organization, it is counted upon to prove a most popular place for dinners, dances, vacation parties and the like. To accommodate members wishing a place for a longer trip and a longer stay, and also some wilder retreat deeper in the mountains and affording better fishing, the club has also arranged for special quarters at Decker Springs, 45 miles away along the South Fork of the Platte river. A new road built by the United States Forest Service, Colorado State Highway Commission, Douglas County and by private subscriptions from good roads workers of Cripple Creek, Victor and Decker's Springs makes this mountain resort for campers easily reached by motor from Denver, Cripple Creek, Victor, Manitou, Colorado Springs, Woodland Park, Sedalia, Castle Rock and other points.

Club Dimmer Ordinance Passed—Kansas City, Mo., has passed an ordinance requiring ground or amber glass on headlights. It is now a law. The measure was prepared by the special committee of the Automobile Club.

Akron Club Wars on J. P.—The Akron Automobile Club, Akron, O., has declared war on Justice of the Peace Campbell, Ravenna. A speed trap has been in operation on the Kent-Ravenna road and several members of the Akron club have been caught there. They were defended and dismissed by the 'squire, but war is still on.

Brenckle Milwaukee Club Secretary—The Milwaukee Automobile Club, Milwaukee, Wis., has given the secretary's duties to Arthur C. Brenckle, who has been treasurer for 3 years and previously was for 4 years secretary. The action resulted from the resignation of Clarke S. Drake. Martin J. Shenners has been elected president of the club to fill the vacancy caused by the resignation of Oscar Stegeman, president of the Stegeman Motor

Car Co., because of the press of private business.

Muskingum Club Formed—The Muskingum County Motor Club has been organized with a large preliminary membership and steps have been taken to affiliate with the Ohio Automobile Association. Constitution and by-laws similar to those of the Columbus Automobile Club have been adopted. A board of twenty-one directors has been elected.

Fond du Lac Club Organized—The Fond du Lac County Automobile Club, with a membership of nearly 200, has been organized at Fond du Lac, Wis., with the slogan, "Better Roads." The club intends to devote most of its time to the promotion of highway improvement, sign posting, and keeping roads in repair and free from obstructions. Officers were elected as follows: President, D. C. Sargent; first vice-president, P. B. Haber; second vice-president, R. H. Lee; secretary, H. H. Dodd; treasurer, H. F. Wetter. All pathmasters and other members of the sel

county highway department have been granted honorary memberships. The annual membership fee for active members is \$2.

Form Good Roads Club—The Molson Good Roads Club, Molson, Wash., has been organized with J. F. Dunlap, president; C. A. Potter, vice-president, and G. B. Avery, secretary-treasurer.

Lorain Club Has 254 Members—A membership campaign held by the Lorain County Automobile Club, Elyria, O., recently resulted in increasing the membership of the club to 254. Prizes were awarded to the team which secured the largest number of members.

Defiance Club Elects—The Defiance County Automobile Club, Defiance, O., has elected the following officers: Edward S. Bronson, mayor of Defiance, president; John G. Schraag, first vice-president; P. W. McReynolds, second vice-president; Dr. C. W. Zeller, third vice-president; Guy H. Kirkley is secretary, and Edward W. Castello is coun-

Akron, O.—Aero Rubber Co., to manufacture rubber articles; capital stock, \$50,000; incorporators, A. A. Koplin, J. D. Slater, W. F. Wotring, Morgan Howells and W. R. Price.

Chicago, Ill.—Lozier Motor Co. of Ill.; capital stock, \$2,500; incorporators, Fred Bernstein, J. F. Grossman, A. L. Bernstein.

Cleveland, O.—Westgard Tire and Rubber Co., to deal in tires; capital stock, \$10,000; incorporators, Joseph I. Eagleson, George S. Myers, J. F. Potts, E. L. Kratzer, B. E. Hoffman.

Cleveland, O.—Wright Tire and Rubber Co., to deal in tires; capital stock, \$100,000; incorporators, Richard Ryan, Robert Wright, C. R. Wagner, C. F. Hiller and A. C. Foose.

Cleveland, O.—Lakewood Garage Co., to operate a garage; capital stock, \$25,000; incorporators, S. R. Palmer, D. R. Knisely, R. R. Palmer, R. M. Evans, M. I. Palmer.

Cincinnati, O.—Buckeye Tire Co., to deal in tires; capital stock, \$5,000; incorporators, Lehman, R. R. Woolley, C. W. Shields, John Bleska, Stanley W. Lewis.



Cincinnati, O.—H. W. Fenker Co., to manufacture motor cars and accessories; capital stock, \$50,000; incorporators, H. W. Fenker, Irma S. Fenker, J. L. Clarke, J. D. Henry and James R. Stewart.

Louisville, Ky.—Best Mfg. Co., to manufacture motor car devices and electrical appliances for

motor cars; capital stock, \$100,000; incorporators, George H. Turner, A. T. Burgevin and S. S. Fitzpatrick.

New York—Brown Taxicab Co., Inc., to operate motor cars, taxicabs, etc.; capital stock, \$277,750; incorporators, W. K. Eagle, J. E. Wald, J. D. Tannill.

New York—Essex Motor Truck Co., Inc., to manufacture motors, engines, motor cars, seats, operate garages, etc.; capital stock, \$600,000; incorporators, D. K. Ellinforer, G. Feeney, J. J. Miller.

Paducah, Ky.—Paducah Auto & Mfg. Co., to deal in and repair motor cars; capital stock, \$25,000; incorporators, H. J. Jennings, R. M. Jennings, W. F. Mangum and A. H. Mangum.

Portland, Me.—Anderson Hays Motor Co., to manufacture and deal in motor vehicles, machinery and accessories of all kinds; capital stock, \$100,000.

Pittsburgh, Pa.—American Automobile Ass'n; capital stock, \$30,000; incorporators, W. M. Enright, A. K. Stoughton, C. L. Brinton.